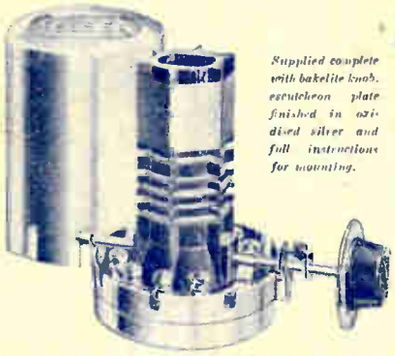
The Wireless World

4D

THE PRACTICAL RADIO JOURNAL *with* *Complete Foreign Programmes*

Friday, February 3rd, 1933.

TELSEN SCREENED TUNING COILS



Supplied complete with bakelite knob, escutcheon plate finished in oxidised silver and full instructions for mounting.

SUITABLE as aerial coils, or as anode coils, following a S.G. valve, giving selectivity comparable with a well-designed band-pass filter.

Single Screened Coil 8/6
Twin Matched Coils ..... 17 -
Triple Matched Coils 25/6

TELSEN RADIO COMPONENTS

TELSEN RADIO COMPONENTS ARE 100% BRITISH

Announcement of the TELSEN ELECTRIC Co. Ltd., Aston, BIRMINGHAM

SONOCHORDE

SENIOR D.C. MODEL (11" CONE) MOVING COIL SPEAKER

"From the Point of View of Efficiency and Sensitivity this Model is Equal to anything we have so far tested, regardless of Price . . ."

says the Wireless World January 20th, 1933.

PRICE 42/6 Complete

Permanent Magnet Model, 62/6

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Heavy-load Resistances

These wire-wound Resistances will stand a load of ten watts. The different ranges with the corresponding maximum permissible milliamperes are given below.

Resistance	Milliamps	Price
200 ohms	200	3 - each
500 ,,	140	3/- ,,
1,000 ,,	100	3 - ,,
2,500 ,,	60	3/- ,,
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7,500 ,,	35	3/6 ,,
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50,000 ,,	10	5/- ,,

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★ THE FINEST METHOD OF OBTAINING H.T. CURRENT from an L.T. BATTERY

Owing to increased demand, these machines, famous for supplying smooth, reliable H.T. and G.B. current from a 6 or 12v. battery, are now priced from £8. Quality unchanged—Built to last!

These machines consume only modest current!

Special Models for McMichael, G.E.C., Philips and Peto-Scott short-wave receivers £9.10.0. Eddystone Model £8.5.0.

Models to suit all Long and Short-Wave Receivers!

M-L ANODE CONVERTERS

Write for Full Details post free from Dept. 1.

ROTAX LTD., WILLESDEN, LONDON, N.W.10

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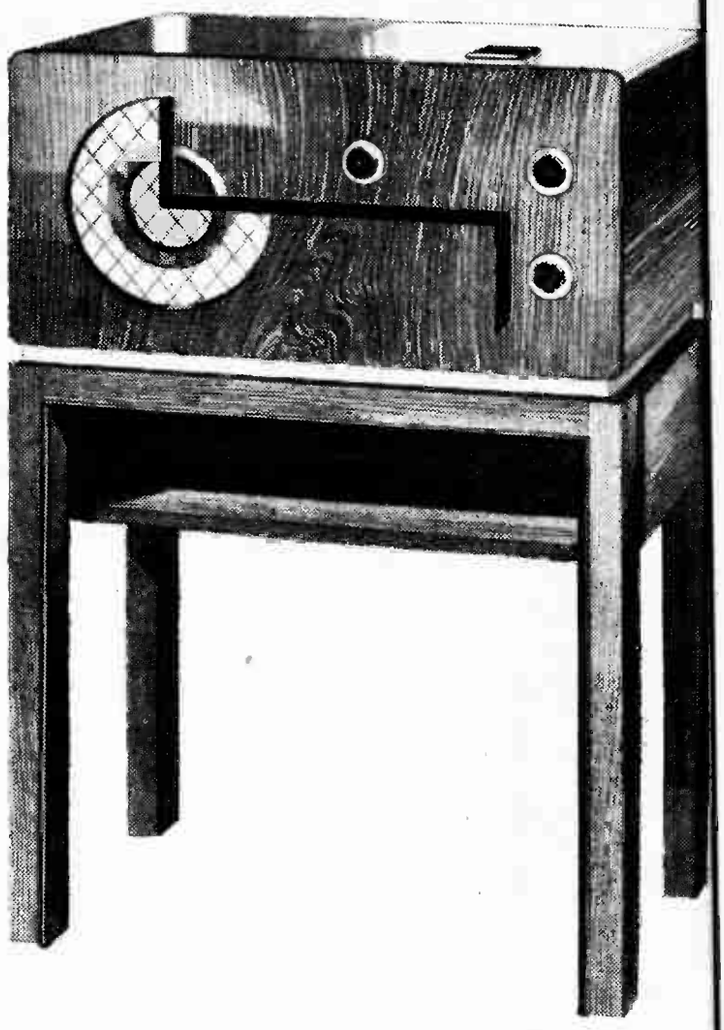
MURPHY RADIO

IT is very difficult for me to discuss with you in this small advertising space the various problems of Selectivity, Amplification, Ease of Control and the hundred and one other things that govern the performance of such a set as the A8. That is largely the reason why I've written a short book on our new set—so that you can have an opportunity of reading in detail what my views are. To some, this book may not seem to tell them a great deal. To others, I may be talking right over their heads, but as far as possible I have written what I think will be of real interest to the majority of you technical people if you will spend an evening reading it.

Any Murphy dealer will be pleased to give you a free copy if you will ask him.

Frank Murphy

B.Sc., A.M.I.E.E., A.I.Rad.E.,
Chartered Elect. Engineer.



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Nine valves, including mains rectifying valve. *Automatic volume control*, using double diode valve. This eliminates to a great extent fading on distant stations, and forms a necessary control of volume when receiving the local stations. Manual volume control also fitted. This controls both radio and gramophone record reproduction. Single dial tuning. Scale illuminated and calibrated in wavelengths.

One main switch used for switching on set, changing from medium to long waves and putting gramophone jack in circuit. Moving Coil Speaker; undistorted power output approximately 2 watts. Walnut Cabinet.

£24

Nett cash with order.

Ask your dealer for full particulars of Murphy Sets.

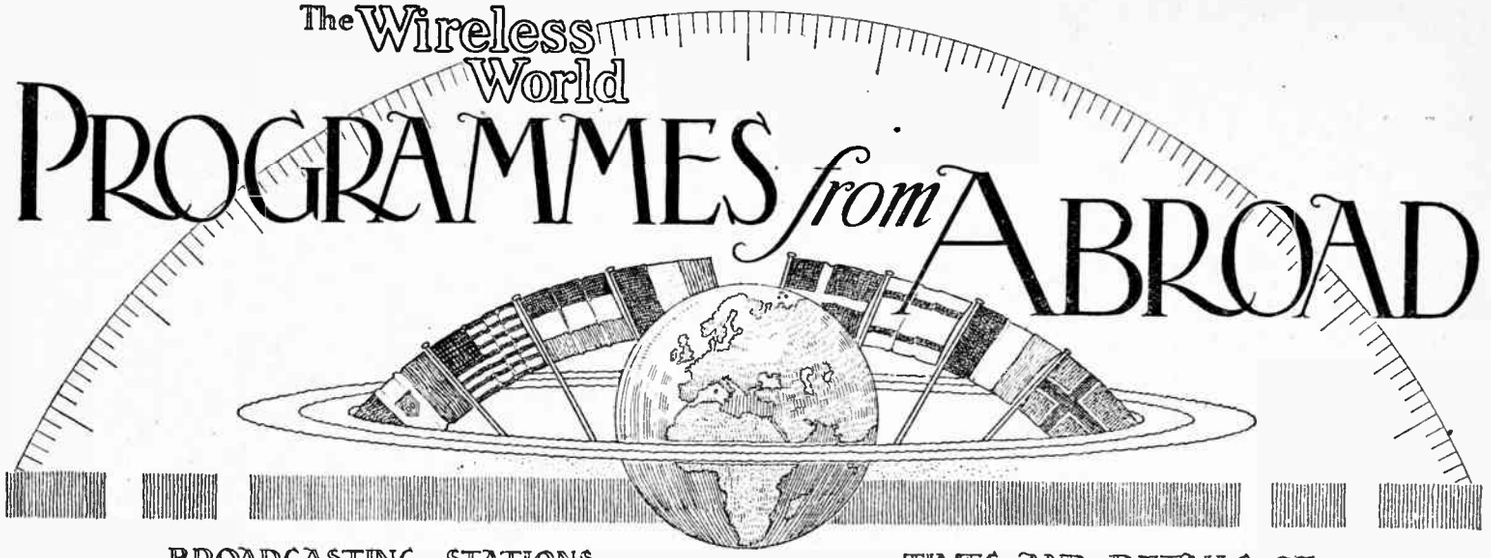
4-VALVE BATTERY OPERATED - - -	£12 - 10
3-VALVE ALL ELECTRIC, with Pedestal -	£15 - 5
3-VALVE ALL ELECTRIC, without Pedestal -	£13 - 10

★ *All Murphy sets are obtainable on Hire Purchase Terms.*

MURPHY RADIO LTD., WELWYN GARDEN CITY, HERTS. Telephone: WELWYN GARDEN 800

M.C.25A

The Wireless World PROGRAMMES *from* ABROAD



BROADCASTING STATIONS ARRANGED IN ORDER OF WAVELENGTH

TIMES AND DETAILS OF FULL WEEK'S FOREIGN TRANSMISSIONS

Metres.	Kc.	kW.	Station.	Tuning Positions.
1935	155	7	Kaunas (Kovno) (Lithuania)	
1875	160	8.5	Hilversum (Holland)	
1796	167	40	Lahti (Finland)	
1725	174	75	Radio Paris, C.F.R.	
1635	183.5	60	Zeesen (Königswusterhausen) (Germany). (*S.-W. Stn. DJA on 31.38 m.*)	
1554.4	193	30	Daventry National	
1538	195	7	Ankara (Angora) (Turkey)	
1431	202.5	100	Moscow, RV1 (Old Komintern) (Russia)	
1446	207.5	13	Eiffel Tower, FL, Paris	
1412	212.5	120	Warsaw 1 (Poland)	
1380	217.5	100	Novosibirsk, RV6 (Russia)	
1348	222.5	30	Motala (Sweden). (*Relays Stockholm*)	
1304	230	100	Moscow, WZSPS (Trade Union) (Russia)	
1275	235	0.5	Tunis-Kasbah (Tunisia)	
1230	244	0.6	Boden (Sweden). (*Relays Stockholm*)	
1200	250	5	Stamboul (Turkey)	
1200	250	21	Reykjavik (Iceland)	
1170	256	25	Tashkent, RV11 (Russia)	
1154	260	7.5	Kalundborg (Denmark). (*Relays Copenhagen*)	
1117	268.5	40	Moscow, Popoff RV58 (Russia)	
1083	277	60	Oslo (Norway)	
1071	280	35	Tiflis, RV7 (Russia)	
1035	290	36	Kiev, RV9 (Russia)	
1000	300	100	Moscow (Russia)	
938	320	20	Kharkov, RV4 (Russia)	
857	350	100	Leningrad (Russia)	
840	357	18.5	Budapest (Hungary)	
825	363.6	50	Sverdlovsk, RV5 (Russia)	
770	389	0.6	Ostersund (Sweden). (*Relays Stockholm*)	
760	395	1.3	Geneva (Switzerland). (*Relays Sottens*)	
720	416.6	20	Moscow, RV2 (Experimental) (Russia)	
690	434.6	1.5	Oulu (Uleaborg) (Finland)	
680	441.2	0.6	Lausanne (Switzerland). (*Relays Sottens*)	
574.7	522	2.5	Ljubljana (Yugoslavia)	
569	527	0.25	Freiburg-im-Breisgau (Germany). (*Relay Stn.*)	
568.1	528	2	Grenoble (France)	
566	530	0.25	Hanover (Germany). (*Relays Hamburg*)	
563	533	16	Wilno (Poland). (*Relay Station*)	
560	536	0.25	Augsburg (Germany). (*Relays Munich*)	
560	536	0.7	Hamar (Norway). (*Relays Oslo*)	
560	536	1.5	Kaiserslauten (Germany). (*Relays Munich*)	
558.6	537	1	Tampere (Finland). (*Relays Helsinki*)	
550	545	18.5	Budapest No. 1 Lakihegy (Hungary)	
542	554	3	Palermo (Italy)	
542	554	10	Sundsvall (Sweden). (*Relays Stockholm*)	
533	563	60	Munich (Germany)	
525	571	15	Riga (Latvia)	
517	580	15	Vienna (Rosenhügel) (Austria)	
509	589	15	Brussels No. 1, Velthem (Belgium). (*In French*)	
500.8	599	20	Florence, 1FI (Italy). (*Relays Turin*)	
495.8	605	1.2	Trondheim (Norway)	
488.6	614	120	Prague, No. 1 (Czechoslovakia)	
480	625	50	North Regional (Manchester)	
472.4	635	60	Langenberg (Germany)	
467	642	0.4	Aalesund (Norway)	
465.8	644	1.5	Lyons la Doua, PTT (France)	
459.4	653	60	Beromünster (Schweizerischer Landessender) (Switzerland).	
453.2	662		San Sebastian, EAJ8 (0.6 kW.); Pori (1.0 kW.) (Finland); Danzig (0.5 kW.) (*relays Heilsberg*); Klagenfurt (0.5 kW.) (Austria) (*relays Vienna*); Porsgrund (0.7 kW.) (*relays Oslo*), Tromsö (0.1 kW.), Bodö (0.5 kW.) (Norway); Upsala (0.15 kW.) (Swedon) (*relays Stockholm*).	
453.2	662	10	Odessa, RV13 (Russia)	
447.1	671		Paris, Ecole Supérieure, PTT (7.0 kW.); Rjukan (0.15 kW.), Notodden (0.08 kW.) (Norway) (*relays Oslo*).	
441.2	680	50	Rome, 1RO. (*S.-W. Station, 2RO on 25.4 m.*)	
435.4	689	55	Stockholm, SASA (Sweden)	
430	698	2.5	Belgrade (Yugoslavia)	
424.3	707	2	Madrid, EAJ7 (Union Radio). (*After 7.0 p.m.*)	
424.3	707	100	Moscow, Imini Stalina (Russia)	
419.5	715	1.5	Berlin, No. 1, Witzleben (Germany)	
416.4	720.5	5	Rabat (Morocco)	
413	725	1.2	Dublin (Irish Free State)	
413	725	80	Athlone (Irish Free State) (Testing after 10.30 p.m.)	
408.7	734	16	Katowitz (Poland)	
403.8	743	25	Sottens (Radio Suisse Romande) (Switzerland)	
398.9	752	25	Midland Regional	
394.2	761	12	Bucharest (Roumania)	
389.6	770	120	Leipzig (Germany)	
389.6	770	10	Archangel, RV36 (Russia)	
385.1	779	8	Toulouse (Radiophonie du Midi) (France)	
385.1	779	10	Stalino, RV26 (Russia)	
331	788	16	Lwow (Lemburg) (Poland)	
376.4	797	50	Scottish Regional (Falkirk)	
372.2	806	1.5	Hamburg (Germany)	
370.1	810.5	0.8	Radio, LL, Paris	
368.1	815		Seville, EAJ5 (Union Radio) (1.0 kW.) (Spain); Bolzano (1.0 kW.) (Italy); Helsinki (10 kW.) (Finland) (*relays Lahti*); Kharkov, RV20 (10 kW.) (Russia).	
367.6	816	0.7	Fredriksstad (Norway). (*Relays Oslo*)	
364.1	824	1	Bergen (Norway)	
363.6	825	13	Algiers (Algeria)	
360.6	832	60	Mühlacker (Stuttgart) (Germany)	
355.9	843	50	London Regional (Brookmans Park)	
352.1	852	7	Graz (Austria). (*Relays Vienna*)	
348.8	860	7.6	Barcelona, EAJ1 (Spain)	
348.8	860	10	Leningrad, RV70 (Russia)	
345.2	869	11.5	Strasbourg, PTT (France)	
341.7	878	35	Brno (Brunn) (Czechoslovakia)	
338.2	887	15	Brussels II, Veithem (Belgium). (*In Flemish*)	
335	896	5	Cadiz (Spain)	
334.4	897	1.9	Poznan (Poland)	
331.5	905	50	Milan (Italy). (*Relays Turin*)	
323.2	914	60	Poste Parisien (France)	
325	923	60	Breslau (Germany)	
321.9	932	10	Göteborg (Sweden). (*Relays Stockholm*)	
318.8	941	0.25	Dresden (Germany). (*Relays Leipzig*)	
318.8	941	1.5	Naples, 1NA (Italy). (*Relays Rome*)	
315.8	950	1.6	Marseilles, PTT (France)	
312.8	959	1.7	Cracow (Poland)	
312.8	959	10	Genoa, 1GE (Italy). (*Relays Turin*)	
309.9	968	1	Cardiff	
307	977	0.7	Radio Vitus (Paris). (*S.-W. Stn. on 43.75 m.*)	
304	986	13	Bordeaux Lafayette, PTT (France)	
301.5	995	50	North National (Manchester)	
293.8	1004	11	Tallinn (Esthonia)	
293.1	1013	20	Huizen (Holland). (*After 4.40 p.m.*) (*Exchanges wavelengths with Hilversum every three months.*)	
293.5	1022	0.7	Limoges, PTT (France)	
293.5	1022	2.6	Kosice (Czechoslavakia)	
291	1031	10	Viipuri (Viborg) (Finland). (*Relays Helsinki*)	
288.3	1040	50	Scottish National (Falkirk)	
288.3	1040	—	British Relays (Bournemouth, Plymouth)	

BROADCASTING STATIONS ABROAD (In Order of Wavelength).

Metres.	Kc.	kW.	Station.	Tuning Positions.
286	1049	0.8	Montpellier (France)	
285.1	1052	0.7	Lyons (Radio-Lyon) (France)	
283.6	1058	0.5	German Relays (Berlin, Magdeburg, Stettin)	
283.6	1058	0.5	Innsbruck (Austria). (*Relays Vienna*)	
282.2	1063	2	Lisbon (T 1AA (Portugal). (*Short-wave Station on* 31.25 *m.*)	
281.2	1067	0.75	Copenhagen (Denmark)	
278.8	1076	13.5	Bratislava (Czechoslovakia)	
276.5	1085	60	Heilsberg (Germany)	
273.7	1096	7	Turin (Italy)	
271.5	1105	1.3	Rennes, PTT (France)	
269.8	1112	20	Bari (Italy)	
267.6	1121	1.5	Valencia (Spain)	
265.8	1128.5	1.3	Lille, PTT (France)	
263.8	1137	11.2	Moravska Ostrava (Czechoslovakia)	
261.5	1147	50	London National (Brookmans Park)	
259.3	1157	17	Frankfurt-a.M. (Germany)	
257.1	1167	10	Hörby (Sweden). (*Relays Stockholm*)	
255.1	1176	0.7	Toulouse, PTT (France)	
253.1	1185	5	Gleiwitz (Germany). (*Relays Breslau*)	
252	1193	1	Barcelona, EAJ15 (Assoc. Nat.) (Spain)	
249.6	1202	0.8	Juan-les-Pins, Nice (France)	
247.7	1211	10	Trieste (Italy)	
245.9	1220	0.12	Swansea	
245.9	1220		Berne (0.5 kW.) (Switzerland) (*relays Beromünster*); Eskilstuna (0.2 kW.), Säffle (0.4 kW.) (Sweden) (*relays Stockholm*); Cassel (0.25 kW.) (Germany) (*relays Frankfürt*); Linz (0.5 kW.) (Austria) (*relays Vienna*); Pietarsaari (0.5 kW.), Turku (Abo) (0.5 kW.) (Finland) (*relays Helsinki*); Schaerbeek (0.1 kW.) (Belgium)	
244.1	1229	0.5	Basle (Switzerland). (*Relays Beromünster*)	
242.3	1238	1	Belfast (N. Ireland)	
240.6	1247	0.5	Stavanger (Norway)	
238.9	1256	2	Nürnberg (Germany). (*Relays Munich*)	
238	1260	1	Nimes (France)	
237.2	1265	3	Bordeaux, Sud-Ouest (France)	
235.5	1274	0.5	Kristiansand (Norway)	
235	1283	1.65	Lodz (Poland). (*Relay Station*)	
232.2	1292	0.25	Kiel (Germany). (*Relays Hamburg*)	
230.6	1301	—	Swedish Relay Stations. (Malmö, Norrköping, Karlstad and Trollhätten).	
229	1310	0.5	Umea (Sweden)	
227.4	1319	0.5	Flensburg (Germany). (*Relays Hamburg*)	
224.4	1337	1	Cork (Irish Free State)	
223	1345	10	Fécamp, Radio-Normandie (France)	
222.9	1346	0.15	Hüdiksvall (Sweden)	
219.9	1365	1.5	Béziers (France)	
218.5	1373	0.5	Salzburg (Austria). (*Relays Vienna*)	
217	1382	0.5	Königsburg (East Prussia) (Germany)	
217	1382	0.25	Karlstad (Sweden)	
215.6	1391	0.1	Brussels, Radio-Chatelineau (Belgium)	
214.3	1400	1	Aberdeen	
214.3	1400	10	Warsaw, No. 2 (Poland)	
211.3	1420	1	Newcastle	
209	1430	0.8	Magyarovar and Miskolcz (Hungary)	
207	1450	0.15	Boras (Sweden)	
206	1460	0.2	Ornsköldsvik (Sweden)	
204.1	1470	0.2	Gävle (Sweden)	
202.7	1480	0.25	Kristineham (Sweden)	
201.3	1490	0.25	Hälsingborg (Sweden)	
195	1530	0.2	Karlskrona (Sweden)	

PRINCIPAL SHORT-WAVE STATIONS.

(N.B.—Times of Transmission, given in parentheses, are approximate only and represent G.M.T.)

Metres.	Kc.	Call Sign.	Station.	Tuning Positions.
80.0	3,750	2RO	Rome	
70.2	4,273	RW15	Khabarovsk (Russia). (*Daily* 09.00–12.00)	
62.56	4,795	VE9BY	London, Ont. (Canada). (*Sun.* 06.00)	
62.5	4,800	W2XV	Long Island, N.Y. (U.S.A.). (*Fri.* 24.00)	
58.3	5,146	PMY	Bandoeng (Java). (*Daily* 12.20 *and* 07.00.)	
58.0	5,172	OK1MPT	Prague (Czechoslovakia). (*Tues. and Fri.* 19.30.)	
54.52	5,502	W2XBH	Brooklyn, N.Y. (U.S.A.). (*Relays WCGU*)	
52.7	5,690	FIUI	Tananarive, P.T.T. (Madagascar)	
52.5	5,714	HCJB	Quito (Ecuador). (*Daily* 12.30)	
51.22	5,857	XDA	Chapultepec (Mexico)	
50.6	5,930	HKO	Medellin (Colombia)	
50.26	5,970	HVJ	Vatican State, Rome. (*Daily* 19.00)	
50.0	6,000	ZL3ZC	Christchurch (New Zealand). (*Wed.* 03.00, *Sat.* 07.30.)	
50.0	6,000	—	Bucharest (Roumania)	
50.0	6,000	RW59	Moscow	
50.0	6,000	EAR25	Barcelona, Radio Club (Spain). (*Sat.* 20.00.)	
49.96	6,005	VE9DR	Drummondville (Canada). (*Relays CFCF*, 01.00-05.00.)	
49.96	6,005	HRB	Tegucigalpa (Honduras). (*Daily ex. Sun.* 00.00–05.00.)	
49.83	6,020	W9XF	Chicago, Ill. (U.S.A.). (*Relays WENR*)	
49.8	6,023	XEW	Mexico City (Mexico). (*Daily* 01.00)	
49.67	6,042	W2XAL	Coytesville, N.J. (U.S.A.). (*Relays WRNY.*)	
49.59	6,050	VE9HX	Halifax (Nova Scotia). (*Relays CHNS*)	
49.58	6,050	GSA	Empire Broadcasting, Zones 4-5	
49.5	6,060	VQ7LO	Nairobi (Kenya Colony). (*Daily* 16.30)	
49.5	6,060	W8XAL	Mason, Ohio (U.S.A.). (*Relays WLW*)	
49.5	6,060	W3XAU	Philadelphia, Pa. (U.S.A.). (*Relays WCAU.*)	
49.43	6,069	VE9CS	Vancouver, B.C. (Canada)	
49.4	6,072	UOR2	Vienna. (*Tues.* 13.00, *Thurs.* 15.00, *Sat.* 23.00.)	
49.34	6,080	W2XCX	Kearny, N.J. (U.S.A.). (*Relays WOR*)	
49.34	6,080	W9XAA	Chicago, Ill. (U.S.A.). (*Relays WCFL*)	
49.22	6,095	VE9GW	Bowmanville, Ont. (Canada). (*Daily* 20.00)	
49.2	6,098	ZTJ	Johannesburg (S. Africa). (*Weekdays* 09.00, 14.00 [*Sat.* 14.30] *and* 17.00, *Sun.* 13.00 *and* 17.30.)	
49.18	6,100	W3XAL	Bound Brook, N.Y. (*Relays WJZ*)	
49.1	6,110	VUC	Calcutta, India. (*Daily* 13.00)	
49.02	6,120	W2XE	Long Island, N.Y. (U.S.A.). (*Relays WABC.*)	
48.86	6,140	W8XK	East Pittsburg, Pa. (U.S.A.). (*Relays KDKA.*)	
48.8	6,147	VE9CL	Winnipeg (Canada). (*Daily ex. Sun.* 00.30)	
48.65	6,167	X1F	Mexico City (Mexico)	
48.35	6,205	HKC	Bogota (Colombia). (*Daily* 15.00)	
48.2	6,220	2RO	Rome (Italy)	
48.05	6,243	HKD	Barranquilla (Colombia). (*Weekdays* 23.45)	
48.0	6,250	CN8MC	Casablanca (Morocco). (*Relays Rabat*)	
47.0	6,382	HC1DR	Quito, Ecuador. (*Daily* 01.00)	
46.69	6,425	W3XL	Bound Brook, N.J. (U.S.A.). (*Relays WJZ irregular.*)	
46.67	6,426	VE9BY	London, Ont. (Canada). (*Sat.* 01.00 *Sun.* 02.00.)	
45.38	6,611	REN	Moscow (*Relays Trade Union Stn.*)	
45.0	6,667	FM8KR	Constantine (Algeria). (*Mon. and Fri.* 23.00.)	
45.0	6,667	TGW	Guatemala City (Central America). (*Daily* 03.00.)	
43.75	6,860	—	Radio Vitus, Paris. (*Daily* 20.30)	
43.0	6,970	EAR11O	Madrid. (*Tues. and Sat.* 22.30)	
41.7	7,195	VS1AB	Singapore (Malay States). (*Sun. and Wed.* 15.30.)	
41.6	7,211	EAR58	Teneriffe (Radio Club) (Canary Islands)	
41.5	7,230	HB9D	Zurich (Radio Club) (Switzerland). (*1st and 3rd Sun.*)	
41.0	7,320	HSP2	Bangkok (Siam). (*Mon.* 14.00)	
40.3	7,443	HBQ	Radio Nations, Prangins (Switzerland). (*Sun.* 22.00-22.45)	
39.7	7,556	HKF	Bogota (Colombia). (*Westinghouse Labs.*)	
39.4	7,612	X26A	Nuevo Laredo (Mexico). (*Thurs.* 16.00)	
38.7	7,797	HBL	Radio Nations, Prangins (Switzerland). (*Sun.* 22.00–22.45.)	
36.92	8,125	PLW	Bandoeng (Java). (*Daily* 10.00–14.00)	
34.68	8,650	W2XV	Long Island, N.Y. (U.S.A.). (*Fri.* 23.00)	
34.68	8,650	VE9BY	London, Ont. (Canada). (*Mon.* 21.00)	
33.50	8,928	TGX	Guatemala City (S. America)	
32.26	9,300	—	Rabat (Morocco). (*Sun.* 21.00)	
31.58	9,500	PRBA	Rio de Janeiro (Brazil). (*Daily* 21.30)	
31.55	9,510	VK3ME	Melbourne (Australia). (*Wed. and Sat.* 10.00.)	
31.54	9,510	GSB	Empire Broadcasting, Zones 2, 4, 5	
31.51	9,520	OXY	Skamlebaek (Denmark). (*Relays Copenhagen.*)	
31.48	9,530	W2XAF	Schenectady, N.Y. (U.S.A.). (*Relays WGY*)	
31.38	9,560	DJA	Zeesen (Germany). (*Daily* 13.00)	
31.35	9,570	SR1	Posen (Poland). (*Tues. and Thurs.* 17.30)	
31.35	9,570	W1XAZ	East Springfield, Mass. (U.S.A.). (*Relays WBZ.*)	
31.3	9,582	W3XAU	Philadelphia, Pa. (U.S.A.). (*Daily ex. Thurs. and Fri.* 21.00.)	
31.3	9,580	HBL	Radio Nations, Prangins (Switzerland). (*Sun.* 22.00-22.45)	
31.29	9.585	GSC	Empire Broadcasting, Zone 3	
31.28	9,590	VK2ME	Sydney (Australia). (*Sun.* 10.00)	
31.25	9,598	CT1AA	Lisbon (Portugal). (*Tues. and Fri.* 22.00–24.00)	
31.10	9,640	HS2PJ	Bangkok (Siam). (*Mon.* 02.00–05.00)	
30.43	9,869	EAQ	Aranjuez (Spain). (*Daily* 23.30, *Sat.* 18.00)	
30.0	10,000	—	Belgrade (Yugoslavia). (*Mon.* 19.00)	
29.3	10,228	T14NRH	Heredia (Costa Rica). (*Daily* 22.00 *and* 02.00.)	
28.98	10,350	LSX	Buenos Aires (Argentina). (*Daily* 20.30)	
26.83	11,180	CT3AQ	Funchal (Madeira). (*Tues. and Thurs.* 10.30–12.30.)	
25.63	11,700	FYA	Pontoise (France). (*Colonial Stn. E-W, daily* 20.00.)	
25.6	11,720	VE9JR	Winnipeg (Canada). (*Daily ex. Sat. and Sun.* 17.45)	
25.53	11,750	GSD	Empire Broadcasting, Zones 1 & 4	
25.5	11,760	XDA	Chapultepec (Mexico). (*Daily* 20.00)	
25.4	11,810	VE9GW	Bowmanville (Canada). (*Daily* 18.00)	
25.4	11,810	2RO	Prato Smeraldo, Rome. (16.00 *and* 19.30)	
25.34	11,840	W9XAA	Chicago, Ill. (U.S.A.). (*Relays WCFL*)	
25.28	11,865	GSE	Empire Broadcasting, Zone 2	
25.27	11,870	W8XK	East Pittsburg, Pa. (U.S.A.). (*Relays KDKA.*)	
25.2	11,905	FYA	Pontoise (France). (*Colonial Stn. N-S*)	
23.38	12,830	—	Rabat (Morocco). (*Sun.* 11.30)	
20.5	14,630	XDA	Chapultepec (Mexico). (*Daily* 19.30)	
19.9	15,075	T14NRH	Heredia (Costa Rica). (*Sat., Sun., Mon.* 16.00 *and* 21.00)	
19.84	15,120	HVJ	Vatican State, Rome. (*Daily* 10.00)	
19.81	15,140	GSF	Empire Broadcasting, Zone 5	
19.73	15,200	DJB	Zeesen (Germany). (*Daily* 13.00–17.00)	
19.72	15,210	W8XK	East Pittsburg, Pa. (U.S.A.) (*Relays KDKA.*)	
19.68	15,244	FYA	Pontoise (France). (*Colonial Stn. E-W*)	
19.56	15,340	W2XAD	South Schenectady, N.Y. (U.S.A.) (*Daily* 18.00.)	
16.9	17,750	HSP	Bangkok (Siam). (*Sun. and Tues.* 21.00)	
16.88	17,770	GSG	Empire Broadcasting, Zone 2	
16.87	17,780	W3XAL	Bound Brook, N.J. (*Weekdays* 13.00)	
16.57	18,105	W9XAA	Chicago, Ill. (U.S.A.). (*Relays WCFL*)	
14.47	20,730	LSY	Buenos Aires (Argentina). (*Sun.* 21.00)	
13.97	21.470	GSH	Empire Broadcasting, Zone 3 (*Daylight working*)	
13.92	21,540	W8XK	East Pittsburg (*Relays KDKA.*)	

FOREIGN SUNDAY PROGRAMMES

FEBRUARY THE FIFTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL	Dvorak programme, gramophone records. Rev. E. S. Waterhouse: "The Future Life." Music by Herman Finck, conducted by the composer. "God and the World through Christian Eyes," by Dr. Edwyn Bevan. Orchestral concert from Eastbourne.
LONDON REGIONAL	Military Band concert. "Reading from Classical Literature," by Ronald Watkins. Service from St. Barnabas' Church, Gillingham. Sunday orchestral concert.
MIDLAND REGIONAL	Organ and pianoforte recital. Service conducted by Rev. D. R. Morgan, from the Cathedral, Birmingham.
NORTH REGIONAL	Service from Carlisle Cathedral. London Regional programme.
WEST REGIONAL	Carolare No. 7. Orchestral concert.
SCOTTISH REGIONAL	Professor Tovey's Sunday concert. Service from St. Cuthbert's Parish Church, Edinburgh.
BELFAST	Service of Old Psalmody, relayed from the New Row Presbyterian Church, Coleraine.

ABROAD

BRUSSELS (No. 2)	Gala concert by the Radio Orchestra, conducted by C. Walpot.
HAMBURG	The Philharmonic Orchestra, conducted by R. Richter.
HEILSBERG	The Königsberg Opera House Orchestra, conducted by E. Börschel.
LANGENBERG	The Station Orchestra, conducted by Busch Kötter.
STOCKHOLM	Concert by the Station Orchestra.
STUTTGART	Recital of Schubert chamber music.
TOULOUSE	Selections of opera music.

BARCELONA

RADIO-BARCELONA, Call EAJ1, 348.8 metres; 8 kW.—**11.0 a.m.,** Chimes from the Cathedral and Weather Forecast. **1.0 p.m.,** Popular Music on Gramophone Records. **1.30** (in an interval), Theatre Notes. **2.0,** Film Review, followed by Concert by the Station Sextet. **3.0,** Programme for Hospitals and other Benevolent Institutions, with Gramophone Records. **4.0 to 5.30,** Interval. **5.30,** Agricultural Talk in Catalan, followed by Part Relay of an Opera from the Gran Teatro del Liceo. **9.0,** A Musical Comedy, on Gramophone Records. **10.45,** Chess Lesson. **11.0** (approx.), Close Down.

BASLE.—See **Schweizerischer Landessender.**

BELGRADE

430.4 metres; 2.5 kW.—**11.30 a.m.,** Orchestral Concert of Operatic Music. **12.30 p.m.,** News Bulletin. **2.0,** Variety Music on Gramophone Records. **2.30,** Sokol Talk. **3.0,** Choral Concert. **3.30,** Variety Music on Gramophone Records. **4.0,** Recital of Yugoslav Songs. **5.55,** Time and Programme Announcements. **6.0,** Light Music on Gramophone Records. **6.30,** Wireless Talk. **7.10,** Relay of European Stations. **8.40,** News Bulletin. **8.45** (approx.), Orchestral Concert: Overture, Chal Romano (Ketelbey); Potpourri, Von Wien durch die Welt (Hruby); Waltz, Habanera (Waldteufel); Barcarolle, Die Liebe kam vom Märchenland (Lincke); March, Husarenvedette (Fucik).

BERLIN

KONIGS WUSTERHAUSEN; 1,635 metres; 60 kW.—**10.20 a.m.,** See **Leipzig. 11.0,** Willy Seidel reads from his own Works. **11.20,** Concert from **Berlin (Witzleben).** In the interval at **11.55,** Nauen Time Signal. **1.0 p.m.,** See **Berlin (Witzleben). 1.30,** Gramophone Records of Favourite Operetta Melodies. **2.0,** Talk: The Great Philosophers—Kant. **2.30,** Concert from **Berlin (Witzleben). 3.30,** See **Langenberg. 4.40,** Talk: Art in Handicrafts—German Wood and German Furniture. **5.0,** Quintet in E Flat (Mozart). **5.30,** Rural Programme—The Village in Winter. **6.30,** Aïda—Opera in Four Acts (Verdi), relayed from the Municipal Opera House, Charlottenburg. In an interval at **9.10,** Weather, News and Sports Notes. **10.15,** Weather Report for Shipping, followed by Dance Music from the Café Berlin. **11.30** (approx.), Close Down.

BERLIN

WITZLEBEN; 419.5 metres; 1.5 kW.—**10.30 a.m.,** See **Leipzig. 11.0,** We enter a New Church—Ferdinand Krogmann at the Microphone. **11.20,** Radio Matinee from the Winter Garden. The Weintraub Syncopaters, Hans Fidesser, Lee Parry, Lotto Werkmeister, the Osovsky Ballet and the Winter Garden Orchestra, conducted by Max Roth. **1.0 p.m.,** Dialogue with a Father. **1.30,** Programme for Children. **2.30,** Orchestral Concert, conducted by Eugen Sonntag: Ballet Overture (Kremser); Lento from the Concerto for String Orchestra (Winnig); In der Kirche (Geopfart); Prelude (Massenet-Kellner); Wedding Waltz (Dohnanyi); Selection from The Mask (Hubay); Festliche Musik (Wappenschmitt); Overture, The Cockatoo (Offenbach); A Viennese Waltz (German); Selection from Polenblut (Nedbal); Overture, Die Landstreicher (Ziehrer); Hungarian March (Schubert-Liszt). **3.35** (in an interval), Reading of Poems by Dr. Owiglass. **4.30,** Crises of Yesterday—a Reporter interviews Grandfather, Father and Son. **5.0,** Quartet Concert: Quartet in D, Op. 50, No. 6, for two Violins, Viola and 'Cello (Haydn); Quartet in F (Mozart). **5.50,** A Visit to the Animal-Breeding Week. **6.50,** Sports Notes. **7.0,** Light Opera—a Radio Potpourri by the Berlin Wireless Orchestra, conducted by Clemens Schmalstich, the Maximilian Albrecht Choir, Erna Berger, Emmy Zador, Charles Kullmann, Max Kuttner, Emanuel List and Cornelius Bronsgeest. **8.0** (in an interval), News and Sports Notes. **9.0,** Weather, News and Sports Notes. **9.15** (approx.), Dance Music from the Café Berlin. **11.0** (approx.), Close Down.

BERNE.—See **Schweizerischer Landessender.**

BEROMUNSTER. — See **Schweizerischer Landessender.**

BODEN.—See **Stockholm.**

BODO.—See **Oslo.**

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—**8.0 a.m.,** Review of the Paris Morning Press, relayed from **Paris (Ecole Supérieure) (447.1 metres). 12 Noon,** Concert, relayed from **Paris (Ecole Supérieure). 2.0 p.m.,** Relay from **Paris** or Relay of a Local Festival. **2.30,** Symphony Concert from the Salle des Fêtes, relayed from **Paris (Ecole Supérieure). 4.30,** Pasdeloup Symphony Concert, relayed from the Théâtre des Champs-Elysées, Paris. **6.50** (approx.), Radio Journal. **7.45,** Sports Notes. **8.0,** Programme for Ex-Servicemen. **8.15,** Lottery Results. **8.30,** Popular Concert on Gramophone Records. **9.0,** Terre inhumaine—Play (François de Curel). After the Play, Entertainments Guide and Time Signal.

BRATISLAVA

279 metres; 14 kW.—**4.40 p.m.,** Concert by the Station Orchestra, conducted by F. Dyk: Overture No. 1 (Blodek); Selection from Lohengrin (Wagner); Nocturne (Haydn); Suite from Raduz and Mahulena (Suk); Slav Dance No. 6 (Dvořák). **5.45,** Talk. **6.0,** Concert of Light Music by the Station Band. **7.5,** See **Prague. 9.0,** Cigány Music, relayed from the Astoria Café. **10.0** (approx.), Close Down.

BREMEN.—See **Hamburg.**

BRESLAU

325 metres; 60 kW.; and **GLEIWITZ, 253 metres.**—**10.30 a.m.,** See **Leipzig. 11.0,** Concert from **Vienna. 12.5 p.m.,** Concert from **Hamburg. 1.0,** News Bulletin. **1.10,** The Rhymed Unrhymed, by Trangott Conrad. **1.30,** Programme from **Stuttgart. 2.30,** Talk: Everyday Terms in Political Economy. **3.0,** Programme for Children. **3.30,** Orchestral Concert, conducted by Franz Marszalek. Soloist: Bruno Schäfer (Harp). German Dances (Schubert); Träumerei (Schumann); Suite from The Merchant of Venice (Sullivan); Serenade (Lehár); Slav Dances Nos. 2 and 10 (Dvorak); Berceuse (Bizet); Waltz from Faust (Gounod); Rococo Gavotte (Pataky); Quick Polka, Tritsch-Tratsch (Joh. Strauss). **5.30,** Reporters' Sunday Sports Events. **6.20,** Richard Euringer reads from his own Works. **6.55** (from **Gleiwitz**), Talk on the following Transmission. **7.0,** Undine—Opera in Three Acts (Lortzing), relayed from the Municipal Theatre, **Gleiwitz.** In the first Interval from **8.0 to 8.15,** News; and in the Second Interval from **8.45 to 9.0,** Time, Weather, News, Sports Notes and Programme Announcements. **9.40,** Dance Music from **Berlin (Witzleben). 11.0** (approx.), Close Down.

BRNO

342 metres; 35 kW.—**11.5 a.m.,** Military Band Concert, conducted by F. Zita: Czech March (Oberthor); Overture, The Kiss (Smetana); Selection from Cavalleria rusticana (Mascagni); Moravian Dance (Balling); Torch Dance (Meyerbeer); Bugle Horn Solos: (a) Folk Song, (b) Der Vater des Regiments (Ziehrer); Selection from Die Puppenfee (Bayer); Introduction to Act III of The Devil and Kate (Dvorák); Folk Dance (Zita); March (Vackar). **12.30 p.m.,** See **Prague. 12.45,** Agricultural Programme. **3.0,** See **Moravská-Ostrava. 4.30,** Song Recital by Marta Skoludova. **5.0,** German Transmission: Concert relayed from the German Municipal Library. **6.0,** Winter in the Mountains—Radio Play, with Music by the Station Mixed Choir. **7.5,** See **Prague. 9.20,** Concert of Cigány Music, relayed from **Bratislava. 10.0** (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—**10.0 a.m.,** Popular Music on Gramophone Records. **11.0,** Concert by the Small Station Orchestra, conducted by P. Leemans. Soloist: M. Doulicz (Pianoforte). Overture, Il re pastore (Mozart); Andante from the Fifth Symphony (Tchaikovsky); Pianoforte Solo: Valse de l'adieu (Chopin); Selection from La Traviata (Verdi); Gramophone Records: (a) Lorsque l'enfant revient d'un voyage from Werther (Massenet), (b) Air from The Pearl Fishers (Bizet); Hungarian Rhapsody No. 14 (Liszt); Eine kleine Nachtmusik (Mozart). **12 Noon,** Concert relayed from the Grand Hotel, Antwerp. **1.0 p.m.,** Le Journal Parlé. **1.10,** Concert by Mickey's Club Jazz Attraction. **1.15,** Yvan Fadel, Humorist at the Pianoforte. **1.30,** Monologues. **1.45,** Concert by Mickey's Club Jazz Attraction (contd.). **5.0,** Light Music, on Gramophone Records. In the interval at **5.30** (approx.), Football Results. **6.0,** Pianoforte Recital by Mme. Angèle Simonart: Prelude and Fugue in C Minor (Bach); Sonata Op. 57 in F Minor (Beethoven). **6.30,** The Adventures of Bonzo—Radio Sketch (Leroy). **6.50,** Organ Recital by Louis Joos, relayed from the Carmelite Church: Prelude and Fugue in B Minor (Bach); Pastorale (Maleingrean); Sonata No. 6 (Mendelssohn). **7.15,** Religious Address. **7.30,** Agricultural Talk and Music Review. **8.0,** Surcouf—Operetta (Planquette), relayed from the Grand Theatre, Verviers. In the intervals: (a) The Seal—Comedy in One Act (Grenet-Dancourt), (b) Le Journal Parlé. **11.0** (approx.), Popular Music on Gramophone Records. **12 Midnight,** Close Down.

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW. Programme in Flemish.—**10.0 a.m.,** Concert by the Small Station Orchestra. **11.0,** Gramophone Concert. **12 Noon,** Concert by Mickey's Club Jazz Attraction. **1.0 p.m.,** Le Journal Parlé. **1.10,** Concert relayed from the Grand Hotel, Antwerp: Parade of the Wooden Soldiers (Jessel); Selection from So ein Mädel vergisst man nicht (Erwin); Violin Solo: Schön Rosmarin (Kreisler); Whistling Waltz (Reaves-Evans); Potpourri, 1933 (Dostal); March, Eins, Zwei, Drei (Reisfeld). **5.0,** Concert by Mickey's Club Jazz Attraction. In the Interval at **5.15** (approx.), Sports Results. **6.0,** Gramophone Records: Overture, Benvenuto Cellini (Berlioz); Nights in the Gardens of Spain (Falla); Largo from the Sonata for 'Cello (Chopin); Andaluza (Falla); Ronde villageoise (Chabrier). **6.45,** Song Recital by Mme. Maria Marova, Romance (Tchaikovsky); Down the Don (Mussorgsky); Mushrooming (Mussorgsky); Comme je souffre (Rachmaninov); Le femme du Soldat (Rachmaninov). **7.15,** Religious Address. **7.30,** Music Review. **8.0,** Gala Concert by the Radio Orchestra, conducted by Charles Walpot, and the Station Choir and Vocal Quartet. Soloists: Mmes. Baritza and Brulez (Songs), MM. Toutenel, Locufier, and Leener (Songs), and M. Gason (Saxophone). March of the Grenadiers, Choir and Orchestra, from The Love Parade (Schertzinger) for Soprano; Potpourri, Fünf Uhr-Tee bei Robert Stolz (Dostal); Waltz Suite for Choir and Orchestra: The Blue Danube (Joh. Strauss); Rhapsody in Blue for Pianoforte and Orchestra (Gershwin); Scène de ballet russe (Ketelbey); Finale from the Second Act of Les Saltimbanques (Ganne); Musiquette for Pianoforte and Small Orchestra (Marcel Poot); Melody for Two Pianofortes and Choir, Jazz Band, and Vocal Quartet: Lying in the Hay. Saxophone Solos: (a) Gitana (Kreisler), (b) Waltz Caprice, Vanity (Wiedoeft); Fantasia on Flemish Songs for Soloists, Choir, and Orchestra (Walpot). In the interval, Recitations. After the Concert, Le Journal Parlé. **10.10,** Dance Music. **12 Midnight,** Close Down.

BUCHAREST

394 metres; 12 kW.—**4.0 p.m.,** Concert of Light Music and Rumanian Music by the Marco Orchestra. **5.0,** News and Time Signal. **5.10,** Variety Programme. **5.25,** Concert by the Marco Orchestra. **6.0,** Talk on Romania: Her Agriculture. **6.40,** Light Music on Gramophone Records. **7.0,** Time Signal. **7.2,** An Operetta in Three Acts (Bobesco). In the intervals, News.

BUDAPEST

550 metres; 18.5 kW.—Programme also relayed on **840 metres** from **6.30 to 11.0 p.m.**—**8.0 a.m.,** News and Beauty Hints. **9.0,** Divine Service Relay. **10.0,** Sacred Music and Address, followed by Concert by the Opera House Orchestra. **1.0 p.m.,** Popular Music on Gramophone Records. **2.0,** Agricultural Talk. **2.45,** Broadcast for Schools. **3.30,** News. **3.40** (approx.), Orchestral Concert: Selection from The Goldsmith of Toledo (Offenbach); Waltz from Prince Bob (Huszka); Noeturne (Liszt); Serenade (Naday); Selection from Black-and-White (Garami); Waltz from Count Rinaldo (Szirmai); Rêve angélique (Rubinstein); Selection from The Golden Harp (Jaray). **4.30,** Programme by Cynta Pekuri. **5.0,** Military Band Concert. **6.0,** Talk on Swimming. **6.30,** Dramatic Programme. **8.30,** Sports Notes and Racing Results. **8.40** (approx.), Concert by a Jazz Band and a Cigány Band relayed from the Café Ostende. Soloist: Paul Kalmar (Hungarian Folk Songs). **11.0** (approx.), Close Down.

CASSEL.—See **Frankfurt.**

COPENHAGEN

281 metres; 0.75 kW.; and **KALUNDBORG, 1,153 metres;** 7.5 kW.—**9.0 a.m.,** Divine Service Relay. **10.30,** Weather Forecast. **10.40,** News. **11.0,** Time and Chimes from the Town Hall. **11.5,** Concert by Louis Preil's Instrumental Ensemble. **12.30 p.m.,** Talk in English: The Grand Tour of England—XII. **12.50,** Talk in German: Stephan George. **1.10,** Talk in French: Pessimism. **1.30,** Popular Music on Gramophone Records. **1.55,** Programme for Children. **2.25,** Orchestral Concert from the Axelborg Studio: Soloist, Ingeborg Steffensen (Songs). **4.0** (also relayed by **Skamlebaek** on **31.51 metres**), Service from the Castle Church, Christiansborg. **5.20,** Talk: The Peasant in Danish Literature. **5.50,** Weather Forecast. **6.0,** News. **6.15,** Time Signal. **6.17,** Sports Notes. **6.30,** Talk: The Danish Training College for Teachers. **7.0,** Chimes from the Town Hall. **7.5,** Concert of Italian Music by the Station Orchestra, conducted by Launy Gröndahl: Overture, The Secret Marriage (Cimarosa); Selection from the Good Humoured Ladies (Scarlatti-Tomassini); Selection from La Boutique fantasque (Rossini-Respighi); Intermezzo from L'amore medico (Wolf-Ferrari); Overture, The Force of Destiny (Verdi). **8.0,** Carillon Recital of Danish Folk Melodies from St. Saviour's Church. **8.30,** The Hansen Family—Sketch (Locher). **8.45,** Danish Duets by Hertha Bjorvig and Hedvig Bus. **9.5,** News. **9.15,** Concert by the Radio Orchestra, conducted by Launy Gröndahl: March of the Tin Soldiers (Nedbal); Orientale (Cui); Berceuse (Cui); Aubade (Lalo); Scherzo (Lalo); Selection from Zampa (Hérold); Valse mignonne (Palmgren); March of the Cossacks (Sperber). **10.0,** Dance Music from the Wivex Restaurant. In the interval at **11.0,** Time and Chimes from the Town Hall. **11.30** (approx.), Close Down.

CORK.—See **Dublin.**

DANZIG.—See **Heilsberg.**

DRESDEN.—See **Leipzig.**

FEB. 5th **SUNDAY** *continued*

DUBLIN

Call 2RN, 413 metres, 1.2 kW.; and **CORK, 224.4 metres.**—**8.30 p.m.,** Time Signal. **8.31,** Vocal and Instrumental Concert. **11.0,** Time Signal, News, Weather Report, and Close Down.

FECAMP

223 metres; 10 kW.—**4.0 to 8 p.m.,** Programme in English by the I.B.C. **4.0,** International Broadcasting Club Concert. I'll follow you; Please; Balloons; A Million Dreams; Here lies Love; I don't want to go to Bed. **5.0,** Programme for Children. **5.30,** The Children's Club Concert. **6.0,** Military Marches. Thunder and Blazes; Old Comrades; On the Mall; Sambre et Meuse; The Changing of the Guard; Hands across the Sea; Carry on; Commander of the Legion. **6.30,** Concert of Light Music. Sweet Muchacha; I'll stay with you from There goes the Bride (Grey); Selection from I Pagliacci (Leoncavallo); Hungarian Dance, No. 2 (Brahms); The Lady I love; Toreador Song from Carmen (Bizet); Sleeping Beauty Waltz (Tchaikovsky). **7.0,** Orchestral Concert. Stephanie Gavotte (Czibulka); Serenade (Heykens); Dance of the Tea-Dolls (Schmidt - Hagen); Ideale (Tosti); Vienna, City of my Dreams (arr. Reeve); The Clock and the Dresden Figures (Ketelbey); The Wedding of the Winds (Hall). **7.30,** Concert of Operetta Music. Selection from Frederica (Lehár); Song, I give my Heart from The Dubarry (Mackeben); Waltz from Vienna (Griffiths); Selection from The Dubarry (Mackeben); You are my Heart's Delight from The Land of Smiles (Lehár); Selection from The New Moon (Romberg). **8.0,** Variety. Concert. **9.0** till Close Down. Programme in English by the I.B.C. **9.0,** Variety Concert. Tipperary by Judge Williams; Selection from Love me To-night; Vocal Duet: Happy-go-lucky you, by Layton and Johnstone; Song: I want to cling to Ivy from Jack's the Boy, by Jack Hulbert; Vocal Duet: Same old Moon, by Layton and Johnstone; Song, O Donnell, aboo (Traditional); Selection from The Crooner. **9.30,** Orchestral and Vocal Concert. Souvenir de Capri (Becce); Songs: (a) All through the Night (Traditional). (b) Beware of the Maiden (Craske); Lichesfreud (Kreisler); Songs: (a) The Arrow and the Song (Balfe). (b) Good Old-Fashioned Chorus (Amos); Autumn Leaves (Pepper). **10.0,** Orchestral and Vocal Concert. Comedy Overture (Kéler-Béla); Songs: (a) Ave Maria (Schubert), (b) Down in the Forest (Landon Ronald); Humoresque (Dvorák); Slav Dance, No. 10 (Dvorák); Songs: (a) The Last Rose of Summer (Moor), (b) The Pipes of Pan (Monckton); Valse des fleurs (Tchaikovsky). **10.30,** Concert of Dance Music. A Million Dreams; Someday we'll meet again; Southern Serenade; Lyin' in the Hay; Big Ben is saying Good-night; You've got me in the Palm of your Hand; Mimi; Pal of Dreams. **11.0,** Song and Pianoforte Recital. Pianoforte Solo: Monte Carlo Medley (Robin); Songs: (a) It don't mean a Thing, (b) Down among the Sheltering Palms. Pianoforte Solo: She didn't say "Yes." Songs: (a) Coney Island Washboard, (b) We just couldn't say Good-bye. Pianoforte Solo: Whoopee Medley (Kahn). **11.30,** Orchestral Concert: Overture, Morning, Noon and Night (Suppé); Chinese Fantasy (Deppen); Love sends a little Gift of Roses (Openshaw); Waltz, Tales from the Vienna Woods (Joh. Strauss); From the Canebrake (Gardner); Mignonette (Frimi); Down by the old Mill Stream (Taylor); Waltz: Wine, Woman and Song (Joh. Strauss). **12 Midnight,** Variety Concert: A little Kiss each Morning (Woods); Fun on the 'Phone; Getting a Job. Cornet Solo: I hear you calling me. Now I'm in Love (Yellen); The Mountain Guide; Happy Days; So I joined the Navy. **12.30 a.m. (Monday),** Song Recital: When your Lover has gone; She's a Good Girl; Running between the Raindrops; I still have my Dreams of you; I wasn't ashamed of you, Mother; Dream Lover; Will they love me up in Heaven?; My Love Parade. **1.0,** Concert by an Accordion Band: Selection from Carmen (Bizet); Melody (Eblinger); Melody (Parsons); Mona Lisa (Carter); Selection from Faust (Gounod); La Javanette (Bozi); Melody (Lefèbre); Whistling Waltz (Reeves). **1.30,** Orchestral and Vocal Concert: My Sunshine is you (Stolz). Songs: (a) Reaching for the Moon (Berlin), (b) I am the Words (de Sylva). Good-night Sweetheart (Noble). Songs: (a) Little Things in Life (Berlin), (b) Little White Lies (Donaldson). Last Night I dreamed of you (Kálmán). **2.0,** Dance Music: Let's all sing like the Birdies sing; Try a little Tenderness; Wanderer; When the Morning rolls around; The old Man of the Mountains; How'm I doin'; Let's put out the Lights; Say it isn't so; How are you?; Leave a little for me; Let's all dance the Polka; How do you do, Mr. Brown?; What would happen to me; I can't write the words; How deep is the Ocean; Balloons. **2.57,** Good-night Melody. **3.0,** Close Down.

FLENSBURG.—See **Hamburg.**

FLORENCE.—See **Turin.**

FRANKFURT

259 metres; 17 kW.; and **CASSEL, 245.9 metres.**—**10.30 a.m.,** See **Leipzig. 11.0,** See **Munich. 12.5 p.m.,** See **Langenberg. 1.0,** See **Stuttgart. 2.0,** Agricultural Notes. **2.10,** Agricultural Talks. **3.0,** Concert. **5.0,** Talk arranged by the Frankfurter Zeitung. **5.25,** An Entertaining Interlude. **5.55,** Talk. **6.20,** Sports Notes. **6.35 to 9.0,** See **Stuttgart. 9.0,** Time, News, Weather and Sports Notes. **9.35,** Report on the Six Days' Racing, relayed from the Festhalle. **9.45,** See **Munich. 11.0,** (approx.). Close Down.

FREDRIKSSTAD.—See **Oslo.**

FREIBURG.—See **Stuttgart.**

GENEVA.—See **Radio-Suisse Romande.**

GENOA.—See **Turin.**

GLEIWITZ.—See **Breslau.**

GOTEBORG.—See **Stockholm.**

GRAZ.—See **Vienna.**

HAMAR.—See **Oslo.**

HAMBURG

Call ha (in Morse), **372 metres;** 1.5 kW. Relayed by **Bremen. 269.8 metres; Flensburg, 227.4 metres; Hanover, 566 metres;** and **Kiel, 232.2 metres.**—**10.30 a.m.,** See **Leipzig. 11.0** (from **Flensburg**), Concert by the Municipal Orchestra, relayed from the Deutsches Haus, Flensburg. **11.55** (in an interval), Time and Weather. **1.0 p.m.** (from **Hanover**), Mandoline Concert. **1.30,** See **Stuttgart. 2.30,** Programme for Children. **3.30,** Programme for Children in North German Dialect. **4.40,** Choral Concert by a Pathfinders' Club and a Young People's Association. **4.45,** Humorous Programme. **5.50,** The Sacred Folk Song—Concert by a Solo Quartet for Church Music. **6.30,** Talk: Max Schneider and the Evolution of German Ski-ing. **6.40,** Sports Notes. **6.55,** Weather Report. **7.0,** Concert by the Hamburg Philharmonic Orchestra, conducted by Richard Richter. Overture, Oberon (Weber); Adagio religioso from the Violin Concerto in D minor, Op. 31 (Vieuxtemps); Violin Solo: Hejre Kati (Hubay); Rondo all'ongarese (Haydn); Fantasia for Harp, Op. 95 (Saint-Saëns); Symphonic Poem, The Moldau (Smetana); Overture, William Tell (Rossini); Three Pieces for 'Cello and Pianoforte: (a) Melody (Rubinstein), (b) Spanish Serenade (Glaznnov), (c) Am Springbrunnen (Davidov); Suite, Caucasian Sketches (Ippolitov-Ivanov); Selection from Faust (Gounod); Hungarian March from The Damnation of Faust (Berlioz); News in the interval. **9.0,** Second News. **9.10,** Radio Report on the Harz Ski-ing Championships on the Eckerloch-Schanze, Schierke. **9.30,** Dance Music from **Berlin (Witzleben).**

HANOVER.—See **Hamburg.**

HEILSBERG

276.5 metres; 60 kW.; and **DANZIG, 453.2 metres.**—**10.30 a.m.,** See **Leipzig. 11.0,** Concert from **Vienna. 12.5 p.m.,** Concert by the Königsberg Opera House Orchestra, conducted by Ludwig Leschetizky: Overture, A Midsummer Night's Dream (Mendelssohn); Selection from Tosca (Puccini); Suite from L'Arlésienne (Bizet); Slav Dances Nos. 2 and 8 (Dvorák). **1.0,** Talk on Chess. **1.30,** Radio Report from **Passenheim, East Prussia,** of the Opening of the Tannenberg Ski-Run. **2.0,** Programme for Young People. **2.30,** Old Barrel-Organ Songs. **3.0,** Concert by the Königsberg Opera House Orchestra, conducted by Erich Börschel: Overture, Die Heimkehr aus der Fremde (Mendelssohn); Prelude to Hansel and Gretel (Humperdinck); Rhapsody, España (Chabrier); Suite, Jeux d'enfants (Bizet); Rhapsody in C (Dohnanyi); Overture, Die schöne Galathée (Suppé); Cockney Suite (Ketelbey); Waltz, Tales from the Vienna Woods (Joh. Strauss); Potpourri, Viennese Operetta Revue (Robrecht); March from Die goldene Meisterin (Eysler); Sports Notes in the Interval. **4.45,** Talk: An Englishman in East Prussia. **5.15,** Narratives by Diedrich Speckmann. **5.45,** Concert by the Euphonie Male Voice Choir. **6.15,** Hansjürgen Wille reads from his own Works. **6.45,** Sports Notes. **7.0,** See **Langenberg. 9.15,** News, followed by Dance Music from **Berlin (Witzleben). 11.0** (approx.). Close Down.

HILVERSUM

Announced **HUIZEN; 296.1 metres;** 20 kW. (**7 kW. up to 4.40 p.m.**).—**5.10 a.m.,** Gregorian Chants by the Catholic Radio Society (K.R.O.). **9.10 to 11.55,** Programme of the Christian Radio Society (N.C.R.V.). **9.10,** Organ Recital. **10.0,** Divine Service from the Hague. **11.55 to 4.40 p.m.,** K.R.O. Programme. **11.55,** Orchestral Concert, conducted by Johan Gerritsen: Marche militaire (Schubert); Moment Musical (Schubert); Selection from Lilac Time (Schubert-Berté); Overture, Die Felsenmühle (Reissiger); Waltz, Frühlingsstimmen (Strauss); Radetzky March (Joh. Strauss). **12.40 p.m.,** Talk. **1.0,** Concert (contd.): Overture, Masaniello (Auber); Waltz, Estudiantina (Waldteufel); Heimatsklänge (Krone); Aubade printanière (Lacombe); Selection from Der Bettelstudent (Millöcker); March, Hansa (Siede). **1.50,** Literary Talk. **2.10,** Concert by the Concertgebouw String Orchestra: Quartet in G, Op. 76, No. 1, for two Violins, Viola and 'Cello (Haydn). **2.40,** Recitations. **3.0,** Concert (contd.): Quartet in F Sharp, Op. 59, No. 1 (Beethoven); Quartet in B Flat (Zimmermans). **3.55,** Programme for Hospitals. **4.40 to 7.25,** N.C.R.V. Programme. **4.40,** Divine Service from the Hague. **6.30,** Concert of Sacred Music by a Vocal Quartet. **7.25** till Close Down, K.R.O. Programme. **7.25,** Talk. **7.45,** Football Report. **7.50,** Concert for the Fiftieth Anniversary of the Maastricht Municipal Orchestra. The Municipal Orchestra, the St. Cecilia Choir and Soloists. The Ninth Symphony (Beethoven). **8.55** (approx.), News Bulletin. **9.5,** Pianoforte Recital, followed by Concert (contd.): Te Deum (Dipenbrock). **10.10,** Pianoforte Recital (contd.). **10.20,** Choral Epilogue. **10.40** (approx.). Close Down.

HORBY.—See **Stockholm.**

HUIZEN

(Announced **HILVERSUM**), **1,875 metres;** 8.5 kW.—**11.40 a.m., to 4.40 p.m.,** Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.). **11.40,** Time Signal. **11.41,** Concert by the Wireless Orchestra, conducted by Nico Treep. **1.40 p.m.,** Weekly Book Talk. **2.10,** Quartet in E Minor, From my Life (Smetana), by the Prague Quartet. **2.40,** Radio Play. **4.10,** Variety Music on Gramophone Records and Sports Notes. **4.40 to 7.40,** Programme of the Workers' Radio Society (V.A.R.A.). **4.40,** Programme for Children. **5.40,** Concert by the Little V.A.R.A. Orchestra. **6.30,** The Adventures of Messrs. Wakker and Tropendnit. **6.50,** Sound Film Music by the De Fliereffluiters, conducted by Hugo de Groot. **7.40** till Close Down, A.V.R.O. Programme. **7.40,** Time Signal. **7.41,** News. **7.55,** Concert by the Wireless Orchestra, conducted by Nico Treep. Soloist: Rosa Spier (Harp). Overture, La Princesse jaune (Saint-Saëns); Fantasia for Harp and Orchestra (Dubois); A Wedding Day on Troldhaugen (Grieg); Concertino for Harp and Orchestra (Oberthür); Third Norwegian Rhapsody (Svendsen). **8.40,** Recitations. **9.0,** Concert by the Wireless Orchestra, conducted by Nico Treep. Soloists: Betty v. d. Bosch-Schmidt (Soprano), Toos van Veen (Contralto), Henk Vuskil (Tenor), and Piet Vanderbilt (Baritone). **9.55,** Popular Music on Gramophone Records. **10.10,** Concert by the Wireless Orchestra, conducted by Nico Treep: March Potpourri (Robrecht); Berceuse (Järnefeldt); Waltz, Badner Madl'n (Komzak); Traumerei (Schumann); Overture, The Thieving Magpie (Rossini). **10.40,** Light Music on Gramophone Records. **11.40** (approx.), Close Down.

INNSBRUCK.—See **Vienna.**

KALUNDBORG.—See **Copenhagen.**

KIEL.—See **Hamburg.**

KLAGENFURT.—See **Vienna.**

KOSICE.—See **Prague.**

LANGENBERG

473 metres; 60 kW.—**10.30 a.m.,** See **Leipzig. 10.55,** Talk: The Music of the Week. **11.10,** Concert from **Vienna. 12.5 p.m.,** Concert, conducted by Wolf: Overture, Der Erlenhügel (Kuhlau); Waltz, Erinnerung, an Schweden (Heinecke); Selection from The Hermit's Bell (Maillart); First Peer Gynt Suite No. 1 (Grieg); Folk Scene from Der Evangelimann (Kienzl); Selection from Hoheit tanzt Walzer (Ascher); March Potpourri, Alte deutsche Treue (Frantzen). **1.15,** Shorthand Dictation. **1.35,** Talk: The Structure of the Atom. **2.0,** Talk on Ernst Moritz Arndt. **2.20,** Running Commentary on the West German Ski-ing Championship at Winterberg. **2.40,** Talk: The 125th Anniversary of the Birth of Spitzweg. **3.5,** Talk: The Weaving Industry in the East Mediterranean Lands. **3.30,** Military Band Concert, relayed from Bad Lippspringe; March, Einig Volk (Friedemann); Weddigen-Marsch (Viefhues); Overture, Die schöne Galathée (Suppé); Waltz, La Hussarde (Ganne); The Pappenheim March; Parade March; Lehár Potpourri (Uhl); Nibelungen-Marsch (Sonntag); Cherusker-Ruf Marsch (Reckling); Helenen-Marsch (Lübbert); Hacketäuer Marsch (Beez); Potpourri, Minutenspiele (Fetras); Unter dem Sparrenschild (Henrion); Barbarossas Erwachen (Reckling). **4.40,** Talk: Musicians who died Young, III. **5.10,** The World on Gramophone Records—Through Swabia. **5.30,** Radio Report on Gramophone Records: A Visit to a Social Service Centre at Bochum-Querenburg. **6.5,** Variety Programme. **6.45,** Sports Notes. **7.0,** A Bit of New York—Concert by the Station Orchestra, conducted by Buschkötter. Soloists: Helene Guermanova (Contralto) and Hermann Gürtler (Tenor): Symphony, From the New World (Dvorák); A Bit of New York—Dialogue (Manfred Hausmann); Pacific No. 231 (Honegger); African Songs (Grosz). **9.20,** News and Sports Notes. **9.45,** American Music: Concerto in F for Pianoforte and Symphonic Jazz Orchestra (Gershwin) on Gramophone Records; Negro Spirituals by Harold Roberts (Baritone); Mississippi Suite (Grofé) on Gramophone Records; American Dance Bands on Gramophone Records. **11.0** (approx.), Close Down.

LAUSANNE.—See **Radio-Suisse Romande.**

LEIPZIG

389.6 metres; 120 kW; and **DRESDEN, 3[illegible] metres.**—**10.30 a.m.,** Jesus schläft, was soll ich hoffen—Cantata (Bach) by the Municipal and Gewandhaus Orchestra, the Choir of St. Thomas' and Soloists. **11.0,** Concert from **Munich.** In the interval from **12 Noon to 12.15 p.m.,** Talk on the Wagner Festival in Leipzig. **1.0,** Weather and Time. **1.5,** Programme Announcements. **1.20,** Agricultural Notes. **1.30,** Programme from **Stuttgart. 2.30,** String Quartet in A (Julius Bitter). **3.0,** Reading. **3.30,** Concert by the Leipzig Symphony Orchestra, conducted by Hilmar Weber. **5.0,** Spies—Radio Play (Max Heye). **6.0,** Choral Concert conducted by Max Fischer. **6.30,** Concert of Light Music. **7.10,** Topical Reports on Gramophone Records. **7.40,** Topical Talk. **8.0,** Concert by the Leipzig Symphony Orchestra, conducted by Willy Steffen. Soloist: Elisabeth Bischof (Violin). Festpolonaise in E (Svendsen); Overture in D (Schubert); Concerto in A Minor for Violin and Orchestra, Op. 53 (Dvorák); Overture, Scherzo and Finale, Op. 52 (Schumann). **9.10,** News, followed by Dance Music Relay. **11.0** (approx.). Close Down.

LINZ.—See **Vienna.**

MADRID

ARANJUEZ (EAQ), 30.43 metres; 20 kW.—**10.30 p.m.,** Popular Music. **10.45,** Humorous Talk. **11.0,** Concert of Variety Music. **11.30,** Talk. **11.40,** Light Music. **12 Midnight** (approx.). Close Down.

MADRID

UNION RADIO, Call EAJ7, 424.3 metres; 2 kW.—**8.0 to 9.0 a.m.,** Topical Review. **2.0 p.m.,** Chimes, Time Signal, Theatre Notes, and Concert by the Artys Orchestra. **4.0 to 7.0,** Interval. **7.0,** Chimes and Dance Music, relayed from the Ritz Hotel. **7.30** (in an interval), Agricultural Talk. **8.30 to 9.30,** Interval. **9.30,** Chimes and Time Signal. **9.35** (approx.), Concert; Pianoforte Solos by Elena Romero; Interlude by Ramon Gomez de la Serna; Songs by Luisa Nesi (Soprano) and Franco Mar (Baritone). **12 Midnight,** Chimes and Close Down.

MALMO.—See **Stockholm.**

MILAN.—See **Turin.**

MORAVSKA-OSTRAVA

263.8 metres 11 kW.—**3.0 p.m.,** Concert by the Station Orchestra, conducted by B. Tvrdy. **4.30,** See **Prague. 6.0,** See **Bratislava. 7.5,** See **Prague. 9.20,** Concert of Cigány Music, relayed from **Bratislava. 10.0** (approx.), Close Down.

MOSCOW

TRADES UNION; 1,304 metres; 100 kW.—**4.0 p.m.,** News. **4.10,** Announcements. **4.30,** Concert. **5.30,** Concert of Light Music, or Relay. **8.0,** Talk in English: The Function and Uses of the Trades Union. **8.55,** Time. **9.5,** Press Review.

MOTALA.—See **Stockholm.**

MUHLACKER.—See **Stuttgart.**

MUNICH

533 metres; 60 kW. Relayed by **Augsburg** and **Kaiserslautern, 560 metres;** and **Nürnberg, 239 metres.**—**9.0 a.m.,** Protestant Service. **9.45,** Chimes from Our Lady's Church. **10.0,** Reading from Homer's Odyssey. **10.30** See **Leipzig. 11.0** (from **Nürnberg**), Orchestral Concert. **12.5 p.m.,** Time, Weather, and Programme Announcements. **12.15,** Agricultural Talk. **12.35,** Julius Patzak Song Recital on Gramophone Records. **1.0,** See **Stuttgart. 2.0,** Chess Lesson. **2.45,** Vocal and Instrumental Concert, conducted by Erich Kloss. Soloists: Emmy Steinkohl (Soprano) and Josef Janko (Tenor). **3.45,** The Cosy Corner—Programme arranged by the Social Club of Dimpfiberg. **4.0,** Programme for Mother and Child—a Trip into the Land of Health. **6.0,** Karl Spitzweg Memorial Programme. **5.20,** Concert of Chamber Music by the Stuhlfauth Quartet. **6.0,** Report on the 1933 Eibsee Race, followed by Weather Forecast and Sports Notes. **6.20,** Concert (to be announced). **7.10,** Talk on the Following Transmission. **7.20,** William Tell—Play (Schiller). **9.20,** Time, Weather, News, and Sports Notes. **9.45,** Serenade, conducted by Erich Kloss. **11.0** (approx.), Close Down.

NAPLES.—See **Rome.**

NOTODDEN.—See **Oslo.**

OSLO

1,083 metres; 60 kW. Relayed by **Fredrikstad, 365.8 metres; Hamar, 574.7 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres;** and **Rjukan, 447.1 metres.**—**9.20 a.m.,** Chimes. **9.30,** Divine Service from St. Saviour's Church. **4.0 p.m.,** Orchestral Concert, conducted by Oskar Holst. **5.0,** Talk: Austria To-day **5.30,** Recitations. **6.0,** Parliamentary Review. **6.15,** Weather and News. **6.30,** Chamber Music. **7.0,** Time Signal. **7.1,** Talk. **7.25,** Concert by the Station Orchestra, conducted by Hugo Kramm. Overture, Euryanthe (Weber); Selection from Boris Godunov (Mussorgsky); Indian Lament (Dvorák); In a Nutshell (Percy Grainger); Fjéllstát (Grieg); Selection from Death and Transfiguration (R. Strauss); A Tale (Gunnar

Fjerström); Hungarian Rhapsody, No. 3 (Liszt). 8.40, Weather and News. 9.0, Topical Talk. 9.15, Readings. 9.45, Dance Music on Gramophone Records. 11.0 (approx.), Close Down.

OSTERSUND.—See **Stockholm.**

PALERMO

542 metres; 3 kW.—**9.25 a.m.,** Bible Reading. 9.40, Sacred Music. 10.5, Agricultural Talk. 11.45, Giornale Radio. **12 Noon,** Variety Concert. **12.30 p.m.** (in an interval), Time Signal, Announcements and Weather Forecast. **1.0 to 4.30,** Interval. 4.30, Light Music from the Olympia Tea Rooms. **5.30 to 7.0,** Interval. 7.0, Announcements and Giornale Radio. 7.20, Sports Notes. 7.30, Time Signal and Announcements. 7.45, Symphony Concert on Gramophone Records. 9.0, Recital of Songs. 9.55, News Bulletin.

PARIS

EIFFEL TOWER; Call FLE; 1,445.7 metres; 13 kW. Time Signals (on **2,650 metres**) at **9.26 a.m.** and **10.26 p.m.** (Preliminary and 6-dot Signals).—**12.30 p.m.,** Concert, relayed from **Paris (Ecole Supérieure) (447.1 metres).** 1.0, Concert by the Rex Orchestra. 5.45, Le Journal Parlé. 6.45, Programme for Children. 7.20, Weather Report. 7.30, Gramophone Concert. Part I. Bizet Programme: Prelude to L'Arlésienne; Aria from The Fair Maid of Perth; Spanish Serenade; Selection from The Pearl Fishers. Part II. Variety Music: Ballet égyptien (Luigini); Dear little Mother (Klose); Glückliche Liebe (Loewenthal); L'amour de ma vie (Marinier); Song (Beal); Destiny (Baynes); Waltz Dream (Joyce); Minuet (Schubert); Gipsy Song (Weinberger); Rêve de fleurs (Waldteufel); Chanson d'automne (Waldteufel); Hunting Horn Chorus; Souvenir des Pyrénées (Blondiau). 9.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW. —**9.45 a.m.,** Bible Reading. 10.5, Sponsored Concert. 11.5, Film Stars—Sponsored Programme. 11.40, Sponsored Gramophone Concert. **12.15 p.m.,** Extracts from Sound Films. 12.45, Half-an-hour of Fantasy by Paul Weill. **1.15,** Interval. 1.30, Sponsored Programme. **2.0 to 6.45,** Interval. 6.45, Le Journal Parlé. 7.0, Sports Notes. 7.15, Catholic Review. 7.30, Concert of Light Music. 8.30, Interval. 8.45, Sponsored Concert with Gramophone Records. 10.15, Concert by the Alexandra Scriabin Orchestra, relayed from the Berry. 10.45 (approx.), Close Down.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—**7.45 a.m.,** Light Music on Gramophone Records. 8.0, Press Review and Weather. 8.30, Physical Culture. 10.0, Elementary Book-keeping Lesson. 10.20, Advanced Book-keeping Lesson. 10.40, Spanish Lesson. **11.30 to 12 Noon,** Programme in English by the I.B.C., Gramophone Concert: Famous Waltzes of the World, Part I, by Alfred Beres with his Orchestra: Just an Echo in the Valley, by Val Rosing; Mimi, by Al Benney's Broadway Boys; My Romance; What a Lady Josephine must have been, by Tully Stuart and Eddy Pola; Sandy at the North Pole, Part II, by Sandy Powell; Always in my Heart, by Jack Payne and his Band; Smilin' Through, by Tom Burke. **12 Noon,** Religious Address. **12.20 p.m.,** Sacred Music: Prelude (Bach-Schönberg); Fugue in G Minor (Bach). 12.30, Bilboquet. 12.45, Press Review, News and Weather. 1.0, Orchestral Concert. 1.30, Variety Music on Gramophone Records. 2.0, Popular Gramophone Concert. **3.0 to 3.30,** Programme in English by the I.B.C.: Music by Jack Raymond and his Orchestra: Rama; If you were only Mine; Parlez-moi d'amour; Miss Rena May (Vocalist); Madona; When you hear Fritz play the Twiddly Bits. 3.30, Orchestral Concert. **4.0 to 5.0,** Programme in English by the I.B.C.: Tea-Time Variety Hour: Mr. S. H. C. Williams announcing. 5.0, Orchestral Concert. 5.30, Gramophone Concert of Popular Music. **7.0 to 8.0,** Programme in English by the I.B.C.: Film Fans' Hour. 8.0, Music Hall Programme by the Orchestra, conducted by Maurice André: Soloist: Denis Paulet (Songs). In the intervals at 8.30, News, Weather and Sports Notes and at 9.15, Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW. Relayed by **W8XK** on **48.86 metres** and **25.27 metres.**—**9.0 p.m.,** Temple of Song, from **New York.** 9.30, Vesper Services from Shadyside Presbyterian Church, Pittsburgh. 10.30, Pages of Romance, from **New York.** 11.0, Sealed Power, from **New York.** 11.30, Time Signal. 11.31, Weather Report. 11.32, Teaberry Sport Review. 11.37, Press News-Reeler. 11.42, Strange Facts. 11.44, Temperature Report. 11.45, Programme to be announced. **12.0 Midnight,** Time Signal and Westinghouse Concert. **12.30 to 3.30 a.m. (Monday), New York** Relay. 12.30, Great Moments in History.

FEB. 5th SUNDAY *continued*

1.0, Russian Gaieties. 1.30, Red Adams. 2.0, Sloan's Programme. 2.30, Walter Winchell. 2.45, Jubilo—Singer of the Lonesome Road. 3.0, D. W. Griffith's Hollywood. 3.15, Edna St. Vincent Millay. 3.30, Jean Wald and her Vagabonds. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.15, Press Last-Minute News. 4.20, Alexander Roy (Tenor). 4.30, L'Heure Exquise. 5.0, Time Signal and Good-night.

PORSGRUND.—See **Oslo.**

PRAGUE

488.6 metres; 120 kW.—**10.0 a.m.,** Concert by the Station Orchestra, conducted by O. Jeremias. 11.0, Chimes. 11.5, See **Brno.** **12.30 p.m.,** Agricultural Talk. 12.45, See **Brno.** 1.15, Talk on Social Questions. 1.25 **to 3.0,** Interval. 3.0, See **Moravská-Ostrava.** 4.30, Talk on the West Indies. 4.45, Light Music on Gramophone Records. 5.0, German Transmission: Popular Songs, News and Recitations. **5.45 to 6.0,** Interval. 6.0, See **Bratislava.** 7.5, Concert by the Czech Philharmonic Orchestra, conducted by Clemens Krauss, relayed from the Smetana Hall: Symphony No. 5 in E Minor, Op. 95, From the New World (Dvorák); Rhapsody for Saxophone and Orchestra (Debussy); Bolero (Ravel); Symphonic Poem, Don Juan (R. Strauss). In the interval at 8.0, Time Signal. 9.0, Time, News and Sports Notes. 9.20, Concert of Cigány Music, relayed from **Bratislava.** 10.0 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW; **LAUSANNE, 680 metres;** and **GENEVA, 760 metres.**—**8.55 a.m.** (from **Lausanne**), Chimes. 9.0 (from **Lausanne**), Protestant Service. 10.0 (from **Geneva**), Popular Music on Gramophone Records. 11.0 (from **Geneva**), Literary Talk. 11.30, News and Weather. **11.40 to 1.0 p.m.** (from **Geneva**), Light Music on Gramophone Records. 4.0 (from **Fribourg**), Concert by La Mutuelle Male Voice Choir, conducted by A. Hug, relayed from the Capitol Cinema. Soloists: Marguérite Chapuis (Soprano) and M. Kremel (Pianoforte). 5.30 (from **Lausanne**), Catholic Address. 6.0 (from **Geneva**), Harpsichord Recital by Charles Koller. 6.40 (from **Lausanne**), Sports Notes and News. 7.0, Concert by the Radio Orchestra. 8.0 (from **Lausanne**), Concert by the Budapest Trio: Trio (Tchaikovsky); Trio, Op. 99 (Schubert). 9.0, News and Weather. 9.15 (approx.), Close Down.

RJUKAN.—See **Oslo.**

ROME

Call 1RO, 441 metres; 50 kW. Relayed by **Naples, 319 metres,** and **2RO, 25.4-80 metres.**—**9.10 a.m.,** News, Sports Notes, and Amusement Guide. 9.30, Agricultural Notes. 9.45, Bible Reading. **10.0 to 11.0** and **11.50 to 12.30 p.m.,** See **Turin.** In the interval at **12 Noon,** Time and Announcements. 2.45 (from **Naples**), Weather and Sports Notes. 3.0, Football Results. **3.15 to 5.30,** Orchestral and Vocal Concert. Sports Notes in the interval. 6.30, Football and other Sports Notes and News. 7.0, Time and Announcements. 7.30, Sports Notes. 7.45, The Dollar Princess—Operetta in Three Acts (Fall). In the intervals: Talk and Theatre Talk. News after the Programme.

SALZBURG.—See **Vienna.**

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 379.5 metres; 50 kW. Relayed at intervals by **W2XAF** on **31.48 metres** and by **W2XAD** on **19.56 metres.**—**7.0 p.m.** till Close Down, **New York** Relay. 7.0, Musical Programme. 7.15, Clyde Doerr and his Saxophone Octet. 7.30, Moonshine and Honeysuckle. 8.0, Wayne King's Orchestra. 8.30, Hour of Worship. **12.0 Midnight,** Harmonica Rascals. **12.15 a.m. (Monday),** Wheatena-Ville. 12.30, Pickens Sisters. 12.45, Smith Brothers' Programme. 1.0, Chase and Sanborn Programme. 2.0, General Electric Sunday Circle Concerts. 2.30, American Album of Familiar Music.

SCHWEIZERISCHER LANDESSENDER

BEROMUNSTER, 459 metres; 60 kW; **BASLE, 244.1 metres;** and **BERNE, 245.9 metres.**—**9.0 a.m.** (from **Zürich**), Catholic Address. 9.45 (from **Zürich**), Chamber Music Concert. 10.30 (from **Zürich**), Otto Schwarz reads his Short Story, Kleist. 11.0 (from **Zürich**), Concert by the Radio Orchestra. 11.28, Time and Weather. 11.30, News Bulletin. 11.40, Offenbach and Lecocq Concert by the Radio Orchestra. Overture, Orpheus in the Underworld (Offenbach-Binder); Waltz, Feuilles du Soir (Offenbach); Overture, Le petit due (Lecocq); Waltz, from Les cent Vierges (Lecocq); Selection from Les Bavards (Offenbach-Gauwin); Overture, La petite mariée (Lecock-Turlet). **12.20 p.m.** (from **Zürich**), Agricultural Talk. 1.0, See **Stuttgart.** **2.0 to 3.0,** Interval. 3.0, Variety Music on Gramophone Records. 3.30 (from **Zürich**), Concert by the Male Voice Glee Society, conducted by Dr. Joh. Ulrich Maier, relayed from the Conservatoire. Soloists: Res Fischer (Contralto), and Lyssandro Joannides (Tenor). 4.15 to 5.30, Interval. 5.30 (from **Zürich**), Talk in French-Swiss. 6.0,

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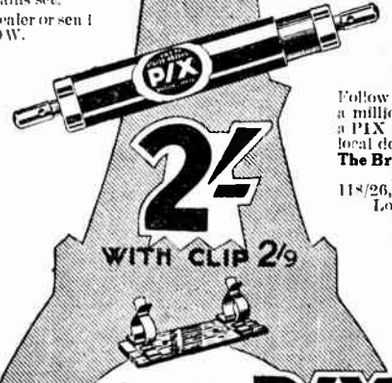

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Time, Weather and Sports Notes. **6.15** (from **Zürich**). Pictures of Swiss History: The Dissolution of the Monastery of St. Gallen. **7.0** (from **Zürich**). Lakmé—Opera in Three Acts (Delibes), relayed from the Municipal Theatre. News in the interval. **9.45** (approx.), Sports Notes and Close Down.

SOTTENS.—See **Radio-Suisse Romande.**

STOCKHOLM

Call SASA; 436 metres; 55 kW. Relayed by **Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,348 metres; Ostersund, 776 metres;** and **Sundsvall, 542 metres.—10.0 a.m.,** Divine Service Relay. **11.45,** Weather and Ice Report. **1.0 p.m.,** Concert, relayed from **Malmö (231 metres).** Conductor: Georg Schnéevoigt. Soloist: Sigrid Schnéevoigt (Pianoforte). **2.40,** Talk in Danish, relayed from **Kopenhamn. 3.0,** Programme for Children. **3.30,** Popular Music on Gramophone Records. **4.30,** Reading. **5.0,** Evensong, relayed from **Kristinehamn (203 metres). 6.15,** Weather and News. **6.30,** Talk. **7.0,** Concert by the Station Orchestra. Soloists: Knut Almroth (Flute) and Ingrid Fager Ström (Harp). Overture, Heimkehr aus der Fremde (Mendelssohn); Andantino from the Concerto for Flute and Harp (Mozart); Allegretto from the Symphony in D Minor (Franck); Selection from Tiefland (d'Albert); Lilljäntäns Song (J. Halvorsen); Ballet Suite from Feramors (Rubinstein); Slav Dances (Dvorák). **8.15,** A Radio Play (Josef Kjellgren). **8.45,** Weather and News. **9.0,** Orchestral Concert of Light Music. **10.0** (approx.). Close Down.

STRASBOURG

345 metres; 11.5 kW.—**9.30 a.m.,** Orchestral Concert, conducted by M. de Villars. **10.45,** Protestant Service in French. **11.30,** Catholic Service in German. **12.0 Noon,** Mozart Concert on Gramophone Records. **12.45 p.m.,** News Bulletin. **1.0,** Time Signal. **1.1,** Popular Songs on Gramophone Records. **2.0,** Agricultural Talk in German. **2.15 to 2.30,** Interval. **2.30,** Symphony Concert, conducted by Henri Tomasi, relayed from the Salle du Journal, Paris. **4.30,** Pasdeloup Concert, relayed from the Théâtre des Champs Elysées, Paris. **6.45,** Medical Talk. **7.0,** Sports Talk. **7.15,** Light Music on Gramophone Records. **7.30,** Time, News and Sports Notes. **7.45,** Light Music on Gramophone Records. **8.35,** Lottery Results. **8.45,** Variety Programme relayed from **Toulouse-Pyrénées (255 metres). 12.0 Midnight** (approx.). Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and **FREIBURG, 570 metres.—10.30 a.m.,** See **Leipzig. 11.0,** Talk: Gramophone Records of Famous German Opera Artists. **12.0 Noon,** Topical Talk. **12.20 p.m.** (from **Karlsruhe**). Agricultural Talk. **12.45,** Popular Music on Gramophone Records. **1.0,** Provincial Programme: The Swabian-Alemannic Feast of Fools in Stockach, Baden—a Radio Sequence (Carl Struve). **2.0,** Programme for Children. **3.0,** Concert by the Symphony Orchestra, relayed from **Pforzheim.** Conductor: Julius Schroder. Soloist: Jakob Hanf (Bassoon): Eine lustige Ouvertüre (Lincke); Selection from Der Bettelstudent (Millöcker); Humorous Polka for Bassoon and Orchestra, Der alte Brummbär (Fucik); Maskenzug (Kämpfert); Potpourri, Von Wien durch die Welt (Hruby); Waltz, Lustige Brüder (Vollstedt). **4.0,** Chamber Music for Wind Instruments, relayed from a Private House in Stuttgart, with Introductory Talk. **5.0,** Richard Zoozmann, Programme for his Seventieth Birthday: Introductory Talk by Martin Lang. Recitations and Gramophone Records. **5.40,** Recital of Schubert Chamber Music, Andrea Wendling (Violin) and Hermann Loux (Pianoforte): Sonatina in D for Violin and Pianoforte; Fantasia in C for Violin and Pianoforte. **6.15,** Sports Notes. **6.35,** Stendhal Programme for the Hundred and Fiftieth Anniversary of his Birth: An Appreciation and Readings from his Book, "Essai sur l'amour." **7.15,** Variety Programme. The Three Optimists. Mischa Ignatiev (Balalaika) and other Soloists. **8.40,** Offenbach Music on Gramophone Records. **9.0,** Time, News, Weather, Programme Announcements and Sports Notes. **9.35,** See **Frankfurt. 9.45,** See **Munich. 11.0** (approx.). Close Down.

SUNDSVALL.—See **Stockholm.**

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—**12.15 p.m.,** News Bulletin. **12.30,** Catholic Service. **1.0,** Amusement Guide and Market Prices. **1.5,** Orchestral Music. **1.15,** Opera Music. **1.40,** Agricultural Report. **1.45,** Protestant Service. **2.15,** News Bulletin. **2.20,** Three Waltzes. **2.30,** Faust—Opera in Five Acts (Gounod). In the intervals, News and Horse Racing Results. **5.15,** News and Horse Racing Results (contd.). **5.20,** Accordion Music. **5.30,** Dance Music. **6.0,** News Bulletin. **6.15,** Orchestral Music: Overture, Fra Diavola (Auber); Schubert Potpourri (Berté). **6.30,** Extracts from Sound Films. **6.45,** Operetta Music: Selection from The Dollar Princess (Fall); Potpourri of Viennese Operetta Music (Robrecht). **7.0,** Spanish Songs. **7.15,** News and Market Prices. **7.25,** Local News Bulletin. **7.30,** Music by a Viennese Orchestra. **8.0,** Opera Music: Aria from Resurrection (Alfano); Rise, fair Sun in Heaven, from Romeo and Juliet (Gounod); Romance from The Pearl Fishers (Bizet). **8.15,** 'Cello Solos: Mazurka (Neruda); Anitra's Dance (Grieg); Adagio (Tartini). **8.30,** Popular Melodies. **8.45,** Symphonic Fantastique (Berlioz). **9.15,** Extracts from Sound Films. **9.30,** Opera Music: Ballet Music from Manon (Massenet); Prelude to the Third Act of Louise (Charpentier). **9.45,** Concert for Listeners in Morocco. **10.15,** North African News. **10.30,** Programme in English by the I.B.C.: Light Orchestral Music: Selection from White Horse Inn (Stolz-Benatzky); Live, love and laugh (Heymann); You are my Heart's Delight (Lehár); Trees; Cuban Love Song; My Heart sings a Broken Melody; An Old Violin; Titania. **11.30,** Bal Musette. **11.45,** Chansonnettes; Les Papillons de Nuit (Gabaroche); Un simple Poupée (Halet); Melody (Zimmermann); An Evening in Singapore (Sylvanio). **12 Midnight,** Weather and Announcements. **12.5 a.m. (Monday).** Orchestral Music: Selection from Alessandro Stradella (Flotow); Pavane pour une Infante défunte (Ravel). **12.15,** Military Music. **12.30** (approx.). Close Down.

TRIESTE

247.7 metres; 7 kW. Relayed by **Milan, 331.5 metres; Genoa, 312.8 metres;** and **Florence, 500.8 metres.—8.40 to 8.55 a.m.,** Giornale Radio. **9.40,** Agricultural Report. **10.0,** Mass relayed from the Church of the Annunciation, Florence. **11.0,** Religious Programme. **11.30,** Orchestral Concert, conducted by Ugo Tansisi. **12. Noon** (in the interval). Time and Announcements. **12.30 p.m.,** Orchestral Concert. **1.30 to 2.30,** Interval. **2.30,** Orchestral Concert. **3.40,** Variety Music on Gramophone Records. **5.0,** Giornale Radio and Football and other Sports Notes. **5.15 to 6.0,** Interval. **6.0,** Announcements. **6.5,** Variety Music on Gramophone Records. In the interval at **6.30,** Time and Announcements. **7.0,** Giornale Radio, Sports Notes and Popular Music on Gramophone Records. **8.0,** Opera Relay. In the intervals, Talk, Theatre Notes, and Giornale Radio.

TRONDHEIM.—See **Oslo.**

TURIN

273.7 metres; 7 kW. Relayed by **Milan, 331.5 metres; Genoa, 312.8 metres;** and **Florence, 500.8 metres.—8.40 to 8.55 a.m.,** Giornale Radio. **9.40,** Agricultural Report. **10.0,** Mass relayed from the Church of the Annunciation, Florence. **11.0,** Religious Programme. **11.30,** Orchestral Concert, conducted by Ugo Tansisi. **12. Noon** (in the interval). Time and Announcements. **12.30 p.m.,** Orchestral Concert. **1.30 to 2.30,** Interval. **2.30,** Orchestral Concert. **3.40,** Variety Music on Gramophone Records. **5.0,** Giornale Radio and Football and other Sports Notes. **5.15 to 6.0,** Interval. **6.0,** Announcements. **6.5,** Variety Music on Gramophone Records. In the interval at **6.30,** Time and Announcements. **7.0,** Giornale Radio, Sports Notes and Popular Music on Gramophone Records. **8.0,** Opera Relay. In the intervals, Talk, Theatre Notes, and Giornale Radio.

VIENNA

517 metres; 15 kW. Relayed by **Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 246 metres;** and **Salzburg, 218 metres.—10.5 a.m.,** Concert by Two Hundred Jazz Musicians, relayed from the Konzerthanssaal. **12.5 to 1.0 p.m.,** Symphony Concert by the Vienna Chamber Orchestra, conducted by Karl Auderieth: Overture, Coriolanus (Beethoven); Symphony in E Flat (Mozart); Tone Poem (Andress). **2.0,** Time, Programme Notes, and Announcements. **2.5,** Book Review. **2.30,** Chamber Music: Pianoforte Quartet in G Minor, Op. 25 (Brahms); Adagio and Rondo (Schubert). **3.0,** Talk: On American Highways. **3.30,** Orchestral Concert. **4.35,** Talk: The Island of Patmos. **5.0,** Carnival in the Aussee District—A Relay from **Gösslam, Grundlsee. 6.0,** Talk: Twenty Nations compete for the International Skiing Championship at Innsbruck. **6.30,** Time, Programme Announcements, and Sports Notes. **6.40,** The Humoreskimos sing Dance Melodies. **7.15,** The Heroic Escape—Radio Play (Robert Walter). **9.0,** News. **9.15,** Relay of the Programme arranged by the Burgtheater Sports Club from the Volksgarten-Etablissement, followed by Dance Music from the Volksgarten-Etablissement.

WARSAW

1,411 metres; 120 kW.—**11.15 a.m.,** Concert by the Philharmonic Orchestra, conducted by T. Mazurkiewicz and a Village Orchestra, conducted by S. Kazuro. Soloist: E. Zathureczky (Violin). Talk in the interval. **1.0 p.m.,** Agricultural Talk. **1.20,** Concert of Folk Songs and Music from the Mountains. **1.50,** Agricultural Talk. **2.10,** Concert by the Szczeglow Mandoline Orchestra. **3.0** (approx.), Programme for Children. **3.25,** Light Music on Gramophone Records. **3.45,** Polish Lesson. **4.0,** Hungarian Music for Violin and Baritone. News in the interval. **4.55,** Programme Announcements. **5.0,** Dance Music from the Café Adria. News in the interval. **6.0,** Miscellaneous Items. **6.35** (approx.), Dramatic Programme from **Cracow (312.8 metres). 7.0,** Popular Concert by the Radio Orchestra, conducted by J. Ozimiński. Soloist: W. Werminska (Soprano). **7.50,** Sports Notes. **8.0,** Concert (contd.). **9.0,** Dance Music from **Cracow. 9.55,** Aviation Weather Report and Police Notes. **10.0,** Dance Music from the Café Zienianska. **11.0** (approx.), Close Down.

ZURICH.—See **Schweizerischer Landessender.**

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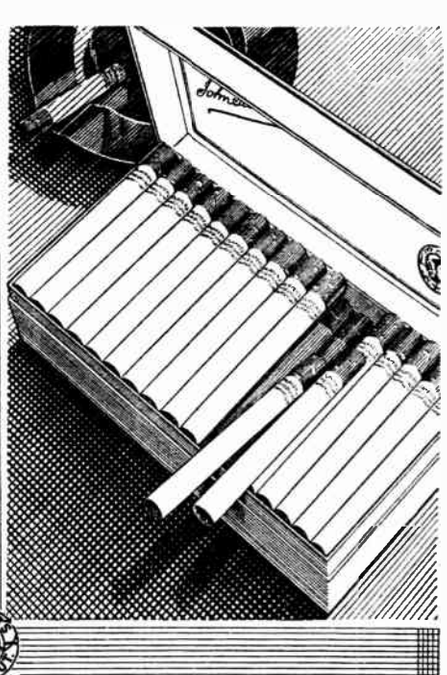

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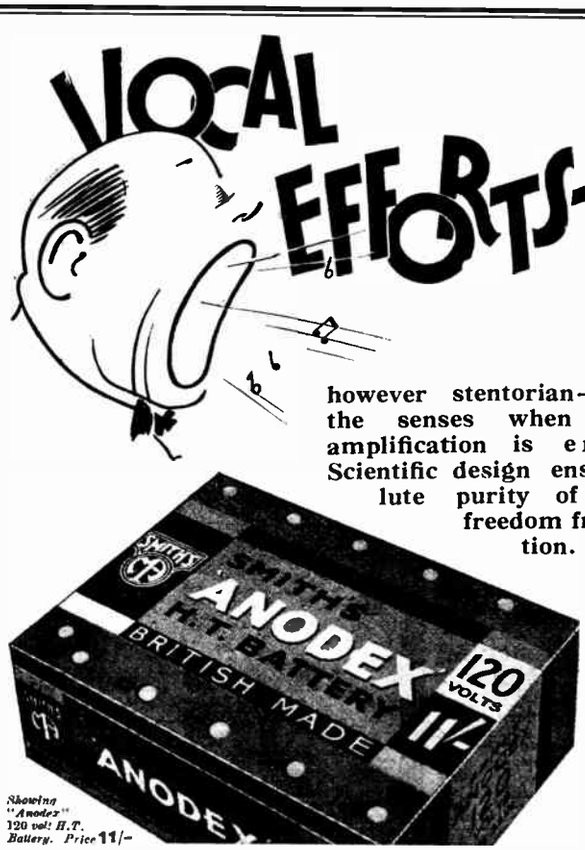

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MONDAY
FEBRUARY THE SIXTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL	Mr. R. Ellis Roberts: "New Books." "Some Makers of the Modern Spirit." Public chamber concert. Vaudeville programme.
LONDON REGIONAL	Royal Marines Band concert. Recital of gramophone records. String orchestral concert. Organ recital.
MIDLAND REGIONAL	Light music. Choral programme. The Sutton Coldfield Musical Committee's concert from the Town Hall, Sutton Coldfield.
NORTH REGIONAL	Mr. F. W. Brooks: "The Seventeenth Century Village. Orchestral concert. "Our Northern Heritage," a chronicle play by Edwin Lewis. Waltzes by Johann Strauss, orchestral programme.
WEST REGIONAL	Orchestral concert. Welsh interlude.
SCOTTISH REGIONAL	Recital of gramophone records. Mr. M. H. Williamson: "Up Helly A'!" Orchestral concert.
BELFAST	Recital of gramophone records. Band programme. The Music of Johann Strauss, orchestral concert.

ABROAD

BERO-MUNSTER	Wagner concert by the Tonhalle Orchestra, Zurich.
COPENHAGEN	Oratorio: "The Seasons," by Haydn.
PALERMO	Concert of chamber music.
RADIO PARIS	Opera: "Othello," by Verdi.
TOULOUSE	Concert of classical music, presented by the I.B.C.

BARCELONA

RADIO-BARCELONA, Call EAJ1, 348.8 metres; 8 kW.—**6.0 p.m.,** Trio Concert. **7.0,** Request Gramophone Concert. **7.30,** Exchange Quotations and a Talk. **8.0,** Popular Music on Gramophone Records and News. **9.0,** Chimes from the Cathedral, Weather Forecast, Exchange Quotations, and Market Prices. **9.5,** Humorous Review of the Week in Verse. **9.15,** Concert of Sardanas. **10.0,** Guitar Recital. **10.20,** Concert by the Station Orchestra: Overture, La Princesse Jaune (Saint-Saëns); Sarabande for String Quintet (de Frumerie); A la cubana (Granados); Siciliana for String Quintet and Oboe (de Frumeric); Phrygian Suite (Brusselmans). **11.0** (in an interval), News Bulletin. **11.30,** Dance Music, relayed from the Hollywood Bar Dancing. **12 Midnight** (approx.), Close Down.

BARI

269.8 metres; 20 kW.—**7.0 p.m.,** Agricultural Notes, Tourist Report and Announcements. **7.20,** Giornale Radio and Weather. **7.30,** Time and Announcements. **7.35** (approx.), Concert of Operetta Music and Songs. Soloists: Michele Montanari (Tenor) and Clara Demitri (Soprano). **9.30,** Concert, relayed from the Gran Caffè del Levante. In an Interval, Miscellaneous Announcements. **9.55,** News.

BASLE.—See **Schweizerischer Landessender.**

BELGRADE

430.4 metres; 2.5 kW.—**6.0 p.m.,** Programme in Commemoration of Veceslav Rendla. **6.50,** Talk on the following Transmission. **7.0,** Relay from the Belgrade National Theatre. **8.30** (in an interval), News.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—**11.55 a.m.,** Nauen Time Signal. **12.35 p.m.,** News Bulletin. **1.0,** Gramophone Concert of Austrian Music, relayed from **Berlin (Witzleben). 2.0,** Talk for Women. **2.30,** Weather and Exchange. **2.45,** Review of Books. **3.0, Talk:** The Training of Teachers in England. **3.30,** Concert from **Berlin (Witzleben). 4.10,** Talk: Everyday Life in Moscow. **4.30,** Songs and Arias for Harpsichord. **5.0,** Talk: German in Eastern Europe. **5.30,** Making Music with Invisible Partners. **5.55,** Weather and Announcements. **6.0,** English Language Lesson. **6.30,** A Poem. **6.35,** Talk on Poetic Art. **7.5,** See **Frankfurt. 8.15,** Talk on Winter Relief. **8.20,** See **Berlin (Witzleben). 9.15,** Weather, News, and Sports Notes. **9.30,** See **Berlin (Witzleben). 9.45,** Weather Report for Shipping, followed by Dance Music from **Berlin (Witzleben). 11.0** (approx.), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—**3.30 p.m.,** Concert of Chamber Music; Introductory Talk; Largo and Rondo from the Duet in C for Violin and Pianoforte (Karl Stamitz); Adagio and Rondo from the Duet Op. 10, No. 2, for Violin and Pianoforte (Franz Neubauer); Pieces for Pianoforte, Violin, and Viola, Op. 83, Nos. 2 and 6 (Max Bruch); Finale from the Suite for Pianoforte, Violin, and Viola (Hans Koessler); First and Last Movements from the Trio Sonata, Op. 4, for Pianoforte, Violin, and Viola (Adolf Sandberger). **4.30,** Should a Doctor Tell?—a Dialogue between a Doctor and a Judge. **4.50,** Review of Books for Young People. **5.10,** Song Recital by Gerda Klemmt (Soprano); Three Songs (Schubert): (a) Sonne du sinkst, (b) Der Schmetterling, (c) Es mahnt der Wald; Three Songs (Schumann): (a) Stille Tränen, (b) Die Meerfee, (c) Mondnacht. **5.30,** Will Vesper reads his own Poems. **5.55,** The Witzleben Station informs its Listeners . . . **6.0,** Talk in connection with the Visit of the Vienna State Opera House to Cairo, relayed from **Cairo. 6.20,** Topical Talk. **6.30,** Concert by Edith Lorand and her Orchestra: Larghetto (Handel); Prelude and Allegro (Pugnani-Kreisler); Minuet (Mozart); Scherzo from A Midsummer Night's Dream (Mendelssohn); Military March (Schubert). **6.55,** Talk on Music. **7.5,** Concert (contd.): Fledermaus-Fantasia (Strauss-Lorand); Potpourri of Hungarian Folk Melodies, A Hungarian Peasant's Wedding (Por); Waltz, Wiener Blut (Joh. Strauss); Zigeunerweisen (Sarasate); Souvenir de Vienne (Lorand). **7.45,** Five of us travel round the world—The Last Stage: The Holy Ganges. **8.20,** The Fifth Symphony in E Minor, Op. 64 (Tchaikovsky), relayed from the Philharmonie; The Berlin Philharmonic Orchestra, conducted by Wilhelm Furtwängler. **9.15,** Weather, News, and Sports Notes. **9.30,** Radio Report on the International Ski-ing Championship in Innsbruck (on Gramophone Records). After the Report, Dance music from the Femina. **11.0** (also relayed by **Zeesen** on **31.38 metres**), New Composition for Electrical Instruments; Music by Paul Höffer, Wolfgang Jacobi, and Ernst Lothar von Knorr; Introductory Talk and Commentary by Prof. Dr. Gustav Leithäuser und Hans von Benda.

BERNE.—See **Schweizerischer Landessender.**

BEROMUNSTER. — See **Schweizerischer Landessender.**

BODEN.—See **Stockholm.**

BODO.—See **Oslo.**

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—**7.30 p.m.,** News. Exchange and Market Prices. **7.40,** Talk: Bordeaux a Century Ago. **7.55,** Lottery Results. **8.0,** Talk on Hygiene. **8.15,** Charades. **8.20,** News Bulletin. **8.30,** Concert of Classical and Modern Music. After the Concert, Entertainments Guide and Time Signal.

BRATISLAVA

279 metres; 14 kW.—**3.10 p.m.,** Concert by the Station Orchestra, conducted by F. Dyk: Four Slav Dances (Lanko); Zigeunerweisen (Sarasate); March (Suchy). **4.10,** Talk. **4.20,** Light Music on Gramophone Records. **4.30,** Song Recital by J. Bloho, with an Introductory Talk by J. Krasko. **5.0,** Popular Music on Gramophone Records. **6.0,** See **Prague. 6.5,** Programme for Women. **6.20,** See **Moravská-Ostrava. 6.35,** See **Brno. 7.0,** A Sketch. **7.30,** See **Brno. 9.0,** See **Prague. 9.15** (approx.), Close Down.

BREMEN.—See **Hamburg.**

BRESLAU

325 metres; 60 kW.; and **GLEIWITZ, 253 metres.**—**12.10 p.m.,** Gramophone Concert: March of the Priests from The Magic Flute (Mozart); Overture and Ballet Music from The Huguenots (Meyerbeer); Aria, Che gelida manina from La Bohème (Puccini); Waltz in A (Levitzki); La Jongleuse (Moszkowski); Responsorium (Gretchaninov); In the Forest (Paschenko); Prelude in G Minor, Op. 23, No. 5 (Rachmaninov). **12.45,** Time, Weather, News, Exchange and Shipping Report. **1.5,** Gramophone Concert: Selection from Casanova (Joh. Strauss); Two Pieces (Boulanger): (a) Recollections of Vienna, (b) Scandinavian Cradle Song; March from Strich durch die Rechnung (Borgmann-Gilbert); Volga Song from The Czarevitch (Lehar); Aquarellen-Walzer (Jos. Strauss); Potpourri, Servus Wien! (Dostal). **1.45,** Sponsored Programme with Gramophone Records. **2.10,** Agricultural Prices. **2.35,** Review of Silesian Periodicals. **3.0,** Talk: Between Russia and Austria. **3.20,** Orchestral Conducted by Max Kaden: Overture, La villanella rapita (Mozart); Suite, Kinderlieder (Blech); Rose Minuet from Die Rose der Königin (Kieslich); Selection from I Pagliacci (Leoncavallo-Dobbler); Vibrationen-Walzer (Joh. Strauss); Selection from Gasparone (Millöcker); Meister Petz am Hofe Mayers, Bassoon-Ragtime (Pécsi); March Potpourri, Die Wache zieht auf! (Kochmann). **4.30,** Agricultural Prices. **4.35,** Talk: The Organisation of Leisure Time for Employed and Unemployed. **4.50,** Report on Intellectual Affairs. **5.15,** English Lesson. **5.40,** Programme to be announced. **6.0,** Medical Talk. **6.30,** Concert from **Berlin (Witzleben). 6.55,** Weather for Families. **7.0,** Anecdotes and Stories of Germany, arranged by Rudolf Mirbt. **7.50,** Announcements. **8.0,** Folk Songs of German Colonies Abroad—The Egeland. The Station Choir and Orchestra, conducted by Ernst Prade. Soloist: Dr. Hans Hermann Adler. **9.10,** Time, Weather, News, Sports Notes, Colonial Market Report and Programme Announcements. **9.35,** Answers to Technical Wireless Questions. **9.45,** Talk: Winter Landscapes in the Eulengebirge. **10.0** (approx.), Close Down.

BRNO

342 metres; 35 kW.—**4.20 p.m.,** Talks for Women. **4.40,** Review of New Political Publications. **5.0,** Talk on Gymnastics. **5.15,** See **Prague. 5.25,** German Transmission: News, Elementary French Lesson, and Medical Talk. **6.0,** See **Prague. 6.5,** English Lesson. **6.20,** See **Moravská-Ostrava. 6.35,** Concert of Dance Music by the Schrammel Quartet. **7.0,** Organ and Song Recital by Vilem Blazek and S. Tauber: Toccata (Purcell); Cantata, Tronchisi pensieri (Carissimi); Concerto in D Minor (Vivaldi-Bach). **7.30,** A One-Act Operetta (Offenbach). **9.0,** See **Prague. 9.15** (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—**12 Noon,** Concert by the Small Station Orchestra, conducted by P. Leemans: Overture, Der Bettelstudent (Millöcker); Dance Suite (Zimbalist); Italian Serenade (Caludi); Selection from Manon (Massenet); Pianoforte Solo: Papillons (Schumann); Violin Solo, Die Biene (Schubert); Paysages Wallons (de Taye). **1.0 p.m.,** Le Journal Parlé. **1.10,** Gramophone Concert: Overture, Les Cloches de Corneville (Planquette); Tes Yeux (Bonincontro); Two Melodies from Les Saltimbanques (Ganne); Serenade, Blonde Amie (Carcel); Selection from Bitter Sweet (Coward); Melody (Lehar); Gipsy Romance (Drizo); Ballet Music from Sylvia (Delibes); Gipsy Romance (Fomine); March (Moreau). **2.0,** Educational Programme. **5.0,** Concert of Rhapsodies by the Station Orchestra, conducted by Charles Walpot: Rhapsody in B Minor (Hartung); Hungarian Rhapsody, No. 14, for Two Pianofortes and Orchestra (Liszt); Norwegian Rhapsody (Lalo); Rapsodie Dahoméenne (A. de Boeck); España (Chabrier). **6.0,** Talk for Housewives. **6.15,** Song Recital by Mlle. Hélène Paul. **6.30,** Sonata Recital by M. Pitsch and M. Scbarès: (a) Sonata, No. 2 (Guy Roppartz), (b) Ballade (Serge Prokofiev). **7.15,** Talk on Folklore, by Louis Banneux. **7.30,** Theatre and Cinema Review. **8.0,** Gala Concert by the Station Orchestra, conducted by M. Van Raalte. Modern Dutch Music: Overture, Viva Carolina (Voormolen); Ciaconna gothica (Dopper); Suite, No. 3 in C (Enthoven). **8.45,** In Praise of Work—Readings from the Poems of Albert Samain, Emile Verhaeren, Adille Millien, and others. **9.0,** Concert (contd.): Symphony No. 6 in B Minor—the Pathetic (Tchaikovsky). **10.0,** Le Journal Parlé. **10.10,** Programme of Hot Jazz, with Commentary by André Asche. **10.40,** Gramophone Concert of Dance Music. **11.0** (approx.), Close Down.

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW.—**12 Noon,** Gramophone Concert of Light Music. **1.0 p.m.,** Le Journal Parlé. **1.10,** Concert by the Small Station Orchestra, conducted by P. Leemans. **2.0,** Educational Programme. **5.0,** Concert by the Small Station Orchestra, conducted by P. Leemans: Overture, Der Schauspieldirektor (Mozart); Four Lyric Pieces (Doulicz): (a) Au Printemps, (b) Scherzettino (c) Intermezzo, (d) Une larme; Alsatian Dances (Levadé); A Summer's Evening on the Terrace (Turina); Ballet Music from Antar (Dupont). **5.45,** Programme for Children. **6.30,** Concert by the Small Station Orchestra, conducted by P. Leemans: Overture on Jewish Themes (Prokofiev); Thamineh (Schoemaker); Suite for Violin (Pergolesi - Stravinsky); Brazilian Dance for Pianoforte, Leme (Milhaud); Asturias (Albeniz); Bourrée fantasque (Chabrier). **7.15,** Talk on Folklore. **7.20,** Talk: Three Flemish Post war Poets—Gysen, Mussche, and Moens. **7.30,** Variety Items. **8.0,** Gramophone Records: Sonetto del Petrarca, No. 104 (Liszt); Introduction and Allegro for Harp (Ravel). **8.15,** Talk for Philatelists. **8.30,** Trio Concert: Trio in E Flat (Hummel); Trio in G Minor (Strens); Trio in B (Schubert). **10.0,** Le Journal Parlé. **10.10,** Gramophone Concert: Selection from The Desert Song (Romberg); Chanson bohémienne (Boldi); Minuet (Bolzoni); The Punch and Judy Show (Black); Scandinavian Dance (Runo); Rose Mousse (Bosc); Selection from William Tell (Kruger); Selection from Tosca (Puccini); Melody from Les Cloches de Corneville (Planquette); Estrellita (Ponce-Davis); Selection from Der Freischütz (Weber). **11.0** (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—**4.0 p.m.,** Concert by the Station Orchestra: March (Fucik); Waltz, Dorfkinder (Kálmán); Oriental Suite, On the Banks of the Nile (Platen); Violin Solo: Mélodie enchanteresse (Ackermans); Orientale (Leopold); Minuet in D (Brunetti); Waltz from Roses from Florida (Fall). **5.0,** News and Time Signal. **5.10,** Talk. **5.25,** Concert (contd.): Berceuse and Canzonetta (Friml); Adagio (Nardini); Potpourri, Von Wien durch die Welt (Hruby); Waltz (Meyer-Helmund); March, Zürich (Heusser). **6.0,** Talk on Romania: Her Forests. **6.40,** Light Music on Gramophone Records. **7.0,** Time Signal. **7.2,** String Quartet (Perlea). **7.40,** Talk. **7.55,** Song Recital by Mlle. Hélène Sarsen; Agnus Dei (Mozart); Aria from Werther (Massenet); Elegy (Massenet); Down in the Forest (Landon Ronald); Es muss ein Wunderbares sein (Liszt); Song (Grieg); Schnee (Lie); Maria Wiegenlied (Reger). **8.15,** Trio, with Pianoforte (Leken). **8.45,** News. **9.0,** Relay of Dance Music.

BUDAPEST

550 metres; 18.5 kW. Programme also relayed on **840 metres** from **7.15 to 11.0 p.m.**—**4.30 p.m.,** Orchestral Concert, conducted by Otto Berg: Comedy Overture (Busoni); Caucasian Sketches (Ippolitov-Ivanov); Waltz (Lehár); Suite No. 2 from the Ballet égyptien (Luigini); Selection from Sybill (Jacobi). **5.45,** German Lesson. **6.15,** Opera Music on Gramophone Records: Selection from (a) de Cid Massenet), (b) Tosca (Puccini), (c) Mignon (Thomas), (d) Faust (Gounod), (e) Carmen (Bizet), (f) The Tales of Hoffmann (Offenbach), (g) Samson and Delilah (Saint-Saëns), (h) Boris Godunov (Moussorgsky). **6.45,** Talk on the Pest Society. **7.15,** Concert by the Arpad Toll Cigány Band. **8.15,** News. **8.30,** Concert by the Opera House Orchestra, conducted by Ernst Dohnanyi. Soloist: Anny Fischer (Pianoforte). Symphony in C (Schubert). Pianoforte Concerto in A Minor (Schumann). **9.15,** Weather Report. **10.0,** Dance Music from the Hotel Bellevue. **11.0** (approx.), Close Down.

CASSEL.—See **Frankfurt.**

COPENHAGEN

281 metres: 0.75 kW.; and **KALUNDBORG, 1,153 metres;** 7.5 kW.—**11.0 a.m.,** Time and Chimes from the Town Hall. **11.5,** String Ensemble Concert, conducted by Max Skalka, relayed from the Hotel d'Angleterre. **1.0 to 2.20 p.m.,** Interval. **2.20,** Talk for the Housewife. **2.30,** Wind Instrument Concert, conducted by Lanny Gröndahl: Coronation March from The Prophet (Meyerbeer); Overture, Poet and Peasant (Suppé); Waltz, Spring Flowers (Wilkenschildt); Bolero from La Chanson de Fortunio (Offenbach); Cavatina (Raff); Polka, Mina (Lumbye); Swedish Folk Melodies and Dances (arr. van Eysden); Anaximander March (Stork); Reading; Wedding March from The Wedding at Ulfasa (Södeman); Waltz, Rosenborg (Aage Brun); Selection from Ghuntarne (Wennerberg); Ständchen (Schubert); Selection from the Music to the Dane in Paris (Fr. Neilsen); Gallop (A. F. Lincke). **4.40,** Exchange and Fish Market Prices. **4.50,** Talk. **5.20,** English Lesson. **5.50,** Weather Forecast. **6.0,** News Bulletin. **6.15,** Time Signal. **6.16,** Talk on Eduard Bernstein. **6.45,** Talk, with Musical Illustrations: Haydn's Oratoria, The Sea-

sons. 7.5, The Seasons—Oratorio (Haydn), relayed from the Oddfellows' Hall. 9.15, News. 9.35, Reading. 10.0, Dance Music from Nimb's Restaurant. In the interval at 11.0, Time and Chimes from the Town Hall. 11.30 (approx.), Close Down.

CORK.—See **Dublin.**

CRACOW

312.8 metres; 1.5 kW.—**2.50 p.m.,** Popular Music on Gramophone Records. **3.25,** Programme from **Warsaw.** In the interval at **4.55,** Programme Announcements and News. **5.50,** Miscellaneous Items and News. **6.15,** Talk: Waxworks. **6.30,** See **Warsaw.** **11.0** (approx), Close Down.

DANZIG.—See **Heilsberg.**

DRESDEN.—See **Leipzig.**

DUBLIN

Call 2RN, 413 metres; 1.2 kW.; and **CORK, 224.4 metres.—1.30 to 2.0 p.m.,** Time Signal, Weather Report, Stock Report, and Light Music on Gramophone Records. **6.15,** Programme for Children. **7.0,** Popular Music on Gramophone Records. **7.20,** News Bulletin. **7.30,** Time Signal. **7.31,** Gaelic Talk. **7.45,** Talk on Poultry Keeping. **8.0,** The Station Sextet. **8.30,** Gentlemen Boarders—Farce in One Act (Eckersley) by the Level Players. **9.0,** Concert of Irish Music by the Station String Orchestra. **9.30,** Traditional Fiddle Music by May Kavanagh. **9.50,** Irish Song Recital by T. O'Flynn. **10.10,** Pipe Band Music. **10.30,** Time Signal, News, Weather Report, and Close Down.

FECAMP

223 metres; 10 kW.—**6.0 to 7 p.m.,** Programme in English by the I.B.C. **6.0,** Concert: Part I—Military Band Music. King Cotton (Sousa); Medley of British Songs; Jungle Drums (Ketelbey); Paree (Pedilla); The Battle of Waterloo (Eckersberg); Valencia (Padilla); National Emblem (Bagley); Le Rêve passe (Krier-Holme). Part II—Orchestral Music: The Skaters' Waltz (Waldteufel); The Cockchafers' Tea Party (Noack); Waltz, Très jolie (Waldteufel); Nachtigall in Fliederbusch (Krome); Over the Waves (Rosas); The Butterfly (Lenin); Soldatenlieder (Gung'l); Grasshoppers Dance (Bucalossi). **10.0** till Close Down: Programme in English by the I.B.C. Dance Music: I wanna sing about you; Little Girl; Ragamuffin Romeo; Three little Words; The longer that you linger in Virginia; Go Home and tell your Mother; Who am I?; Wabash Moon; In a little Rendez-vous; The Match Parade; Two little Blue little Eyes; Say a little Prayer for me; Dancing with the Devil; When the Moon comes over the Mountain; Down Sunny-side Lane; Funny dear, what love can do. **11.0,** Light Orchestral Concert with Songs: The Hit Parade; Songs: (a) Only a Rose (Friml), (b) Goin' Home (Dvorák), (c) Song of the Vagabonds (Friml), (d) Waiting at the End of the Road (Berlin); Old Timers (arr. Griffiths). **11.30,** Organ Recital: Melodies from the Indian Love Lyrics (Woodforde-Finden); Les millions d'Harlequin (Drigo); Bird' Songs at Eventide (Coates); The Londonderry Air (Traditional); A Palace of Dreams (Waller); Selection from the Ballet égyptien (Luigini). **12.0 Midnight,** Concert of Scottish Music: The Glasgow Highlanders (arr. Dyack); Songs: (a) Duncan Gray, (b) Johnnie Cope, (c) Piper o' Dundee, (d) Ye Banks and Braes, (e) Kirkconnel Lea; Meg Merrilies (arr. Dyack). **12.30 a.m. (Tuesday),** Pianoforte Recital: Tuneful Melodies of To-day (Ray); I found you (Noble); Selection from The King of Jazz (Whiteman); 'Let Love take care of you (van Phillips); Selection from Puttin' on the Ritz (Berlin); Popular Melodies (Ray). **1.0,** Light Music: Fall in and follow the Band; Don't look at me that way; Back to tiny Paree; He's a good Man to have around; Sally; I wonder what is really on his Mind; We're uncomfortable; I'm doing what I'm doin' for Love. **1.30,** Vocal Duets: I'm thru' with love; Shine on Harvest Moon; Just one more Chance; Save the last Dance for me; Ain't that too bad; Rosalita; Egyptianella; I lost my Gal again. **2.0,** Dance Music: Love is the Sweetest Thing; Good Morning Mr. Sun; I'll do my best to make you happy; Smile and sing your Cares away; The Voice in the old Village Choir; The Turning of the Tide; Where the Blue of the Night; Day by Day; An Evening in Caroline; Now that you're gone; By the Syeamore Tree; Blues in my Heart; Now's the Time to fall in love; Back again to Happy-go-lucky Days; Only me knows why; Hot Coffee. **2.57,** I.B.C. Good-night Melody. **3.0** (approx.), Close Down.

FLENSBURG.—See **Hamburg.**

FLORENCE.—See **Turin.**

FRANKFURT

259 metres; 17 kW.; and **CASSEL, 245.9 metres.—4.0 p.m.,** See **Langenberg.** **5.15,** Economic Notes. **5.25,** Talk: Disputes about Wavelengths. **5.50,** English Lesson. **6.15,** Time, Programme Announcements, Weather and Economic Notes. **6.25,** Topical Talk. **6.45,** Report on the First Day of the International Ski-ing Championships in Innsbruck. **7.5,** Lehar Concert, relayed from the Opera House. The Station Orchestra, the Egon Kaiser Dance Band, the Station Choir, augmented by Members of the Opera House Choir, and Soloists. **9.30,** Time, News, Weather and Sports Notes. **9.45,** See **Stuttgart.** **11.0** (approx.), Close Down.

FREDRIKSSTAD.—See **Oslo.**

FREIBURG.—See **Stuttgart.**

GENEVA.—See **Radio-Suisse Romande.**

GENOA.—See **Turin.**

GLEIWITZ.—See **Breslau.**

GOTEBORG.—See **Stockholm.**

GRAZ.—See **Vienna.**

HAMAR.—See **Oslo.**

HAMBURG

Call ha (in Morse), **372 metres;** 1.5 kW. Relayed by **Bremen, 269.8 metres; Flensburg, 227.4 metres; Hanover, 566 metres;** and **Kiel, 232.2 metres.—6.0 p.m.,** Karl Söhle reads from his own Works. **6.25,** Weather Report. **6.30** (from **Hanover**), Song Recital by Dusolina Gianno, with the Hanover Opera House Orchestra, conducted by Rudolf Krasselt, relayed from the Municipal Opera House. Old English Suite after Sixteenth Century Composer (arr. Max Ettinger); Aria from Norma (Bellini); Sinfonie breve, No. 96 (Paul Graener); Roll on thou Mighty Ocean Roll, from Oberon (Weber); Symphony No. 2 in C (Schumann); News in the interval. **8.20,** Topical Talk. **8.30** (from **Bremen**), Organ Recital from the Gemeindehaus St. Pauli. Introductory Talk. Allegro and Adagio from the Trio Sonata in C, No. 6 (Bach); Choral Prelude, Vom Himmel hoch (Pachelbel); Concert Fugue in G (Krebs). **9.0,** News Bulletin. **9.10** (from **Bremen**), Concert and Dance Music from the Café Atlantik. **9.50** (in an interval), Ice Report. **10.25** (from **Bremen**), String Quartet No. 3 in A (Schumann).

HANOVER.—See **Hamburg.**

HEILSBERG

276.5 metres; 60 kW.; and **DANZIG, 453.2 metres.—12.5 to 1.30 p.m.,** Gramophone Concert of Slav and Italian Music. In the interval at **12.20,** News. **2.0,** Exchange Rates. **3.0,** Talk: The History of 1932 in Postage Stamps. **3.30,** Concert by the Little Orag Orchestra, conducted by Eugen Wilcken: Overture, Mignon (Thomas); Largo (Handel); Serenade (Haydn); Selection from Tannhäuser (Wagner); Waltz, Deutsche Grüsse (Josef Strauss); Chant sans paroles (Tchaikovsky); Melody (Rubinstein); Selection from Der Bettelstudent (Millöcker). **4.45,** A Dialogue for Motor Drivers, Pedestrians and Cyclists. **5.15,** Market Prices. **5.20** Ice Report. **5.30** (from **Danzig**), Talk: The Old Prussian Population in the Free State of Danzig. **5.55,** Talk: Memorable Days of the Week. **6.5,** Elementary English Lesson. **6.30,** Weather and News. **6.40,** A Pianoforte Cabaret with Lyrics, by Peter Paul Althaus. **7.15,** Die blaue Grotte—A Radio Sequence (George Goldschlag) for the Eightieth Anniversary of the Death of August Kopisch. **8.20,** Concert from **Berlin (Witzleben).** **9.10,** Weather, News and Sports Notes.

HILVERSUM

Announced HUIZEN, 296.1 metres; 20 kW. (7 kW. up to **4.40 p.m.**).—Programme of the Christian Radio Society (N.C.R.V.). **11.55 a.m.,** Variety Music on Gramophone Records. **12.10 p.m.,** Organ Recital by Jan Zwart: Preludes and Chorals (Zwart); Larghetto, Alleluia, and Largo (Handel); Fantasia (Wolf); Prelude (Ewart); Toccata (Kee); Fugue, Trio, and Fugue in C Minor (Bach); Preludes and Chorals (Zwart); Cantabile (Franck); Finale (Franck); Scherzando (Pierné); Finale (Zwart). **1.40,** Programme for Schools. **2.15,** Gardening Talk. **2.55,** Dressmaking Lesson. **3.40,** Bible Reading and Sacred Music. **4.40,** Vocal and Instrumental Concert: Greta de Knegt-ter Haar (Songs), Louis de Ruyter (Violin) and Mlle. Rie Beute (Pianoforte); I know that my Redeemer liveth, from Joshua (Handel); Sonata in D (Handel); La Poule (Rameau); Jesu, Joy of Man's desiring (Bach-Hess); Gavotte and Gigue (Bach); Hear Israel, from Elijah (Mendelssohn); Ballad and Polonaise (Vieuxtemps); Three Etudes (Chopin); Fantaisie impromptu (Chopin); Song (Wagenaar); Two Pieces (Kuiler); Gloria in Excelsis Deo. **6.10,** Answers to Correspondence. **7.10,** Police Notes. **7.25,** Religious Report. **7.40,** Part Relay of the Bruckner Concert, from **Leipzig.** **8.20,** Variety Music on Gramophone Records. **8.40,** Talk. **9.10,** Quintet Concert: Overture, The Crown Diamonds (Auber); Selection from Rigoletto (Verdi); Selection from Le Roi s'amuse (Delibes); Divertissement from Les Erynnies (Massenet); Selection from Cavalleria rusticana (Mascagni); Spanish Serenade (Metra); Overture, La Dame Blanche (Boieldieu). **9.40,** News. **10.40,** Popular Music on Gramophone Records. **11.10** (approx.), Close Down.

HORBY.—See **Stockholm.**

FEB. 6th **MONDAY** ***continued***

HUIZEN

(Announced **HILVERSUM**), **1,875 metres;** 8.5 kW.—**11.40 a.m.** till Close Down, Programme of the Workers' Radio Society (V.A.R.A.). **11.40,** Concert by De Notenkrakers, conducted by M. Wins. **1.40 to 2.10,** Interval. **2.10,** Song Recital by Mme. Tiel-Schmidtke: Addio de Napoli; La Folletta (Marchesi); Feinsliebchen, du sollst mirnicht barfuss gehen (Brahms); Mein Mädel hat einen Rosenmund (Brahms); Sonnatag (Brahms); Frühlingsglaube (Schubert); Der Schmetterling (Schubert); Ich wand're nicht (Schumann); Marienwürmchen (Schumann). **2.40,** Recitations by Mme. Janny van Oogen. **3.10,** Popular Music on Gramophone Records. **4.20,** Programme for Children. **4.50,** Concert by the V.A.R.A. Mandoline Orchestra, conducted by M. Kok. Gramophone Records in the Interval. **5.20,** Recitations by Mme. Rolien Numan. **5.40,** Mandoline Concert (contd.). **5.55,** Organ Recital by M. Jong: Serenade (Gounod); Ballet Music from Faust (Gounod); Serenade (Romberg); I'll try to make you happy (Noble); Air from The Gipsy Princess (Kálmán); The Whistler and his Dog (Pryor). **6.40,** Talk: The Song, with Illustrations by Mlle. Wond (Contralto) and Barend Renden. **7.35,** S.O.S. Messages. **7.40,** From the Piccolo to the Kettle-drum—Gramophone Concert. **8.40,** Recitations. **9.10,** Orchestral Concert, relayed from the Gebouw voor Kunsten en Wetenschappen, The Hague. Conductor: M. Ruygrok. Soloists: Mme. Wickevoort Crommelin (Songs) and M. Wiggelaar (Violin). Prelude to Die Loreley (Bruch); Concerto for Violin and Orchestra (Bruch). Songs: (a) Solveig's Song (Grieg), (b) Solveig's Lullaby (Grieg); Farandole, from the Second Arlésienne Suite (Bizet). **10.20,** News Bulletin. **10.30,** Popular Music on Gramophone Records. **11.40** (approx.), Close Down.

INNSBRUCK.—See **Vienna.**

KALUNDBORG.—See **Copenhagen.**

KIEL.—See **Hamburg.**

KLAGENFURT.—See **Vienna.**

KOSICE.—See **Prague.**

LANGENBERG

473 metres; 60 kW.—**12 Noon,** Concert, conducted by Eysoldt: Military March (Schubert); Overture, Peter Schmoll (Weber); Fantasia, Aus Mozarts Reich (Urbach); Serenade, Siciliana (Schmalstich); Serenata (Tarenghi); Petite Suite de Concert (Coleridge-Taylor); Waltz, An der schönen grünen Narenta (Komzak); Selection from Die geschiedene Frau (Fall); Melody (Mills); Siamesische Wachtparade (Lincke). In the interval at **1.0 p.m.,** News. **1.30,** Meat Market Prices. **2.30,** Economic Notes and Time. **2.50,** Programme for Children. **3.20,** Two Talks for Young People. **4.0,** Orchestral Concert, conducted by Kühn: Suite from Bonduca (Purcell-Unger); Overture, L'épreuve villageoise (Grétry); Ballet Music from The Mask (Hubay); Waltz Intermezzo from Der Freikorporal (Vollerthun); Overture, Le preziose ridicole (Lattuada). **5.20,** The Unwelcome Microphone—Programme by Hermann Tölle. **5.45,** Weather, Time, Economic Report, and Sports Notes. **6.0,** Review of Books and Periodicals for Women. **6.20,** Talk: Employees' Insurance. **6.35,** Talk: The Iron Industry in the Crisis. **6.55,** News. **7.0,** Concert relayed from **Düsseldorf.** The Düsseldorf Chamber Orchestra, conducted by Dr. Alfred Fröhlich. Soloists: Milli Engelmann-Gillrath (Soprano), Hildegard Thienen (Violin), and Wilhelm Strienz (Bass): Prelude and Songs from Mer hahn en neue Oberkeet (Bach); Das Echo, a Suite for Six String Instruments to be played in Two Different Rooms (Haydn); Violin Solo: Rondo from the Haffner Serenade (Mozart); Bass Solo: Nun liebes Weibchen (Mozart); Seleetion from the Five Contredanses for Strings, Flute, and Drum (Mozart); Aria from Die schöne Schusterin (Beethoven); Two Waltzes from the Mödlinger Tänze (Beethoven); Bass Solo: Mit Mädeln sieh vertragen (Beethoven); Hungarian Dance No. 5 (Brahms-Parlow); Overture, The Barber of Seville (Rossini); Folk Songs for Strings (arr. Kassmayer): (a) Bohemian Folk Song, (b) Steirisches Wildschützen-Lied; Overture, Orpheus in the Underworld (Offenbach-Binder). **9.5,** News and Sports Notes. **9.30,** Light Music and Dance Music, conducted by Eysoldt. **11.0** (approx.), Close Down.

LAUSANNE.—See **Radio-Suisse Romande.**

LEIPZIG

389.6 metres; 120 kW; and **DRESDEN, 319 metres.—12.15 p.m.,** Gramophone Concert of Marches and Waltzes. Exchange Quotations after the Concert. **1.0,** Art and Film Notes. **1.30** Advice for the Unemployed. **1.45,** Eyes—A Sketch (Leonhard Schrickel). **2.0,** A Dialogue on Confidence between Mother and Child. **2.35,** Exchange Rates. **3.0,** Concert conducted by Karl Weiss. Soloist: Marianne Tunder (Violin). Overture, Euristeo (Johann Hasse); Concerto in G Minor for Violin and Orchestra (Vivaldi); Chromatic Fantasia and Fugue in D Minor for Pianoforte (Bach); Sonata in A Minor for Violin and Pianoforte (Schumann); Concerto in D No. 7 for Violin and Orchestra (Mozart). **4.30 to 4.45,** Weather and Time Signal. **4.50,** Economic Notes. **5.0,** Educational Talk. **5.30,** Talk: A Thousand Years of German Literature—Mysticism. **5.50,** Programme to be announced. **6.0,** Andante—Lyrics by Alfred Pabst, Arr in Oska, Theo Goerlitz, Carola Schiel, Oskar Kollbrummer and others. **6.15,** Rudolf Sass Songs sung to the Lute by Reinhold Gerhardt. Es geht ein Liedlein; Das Lied eines deutschen Wachtpostens; Wandert, ihr Wolken; Und ich geh nicht von hier; Liegt in Rauhreif; Ständchen; Tanzlied; Lachende Augen; Ein Lied und eine Rose; Anne Marie; St. Florian; Der kluge Peter; Heute wolln wir tanzen geh'n; Eine antike Forumsgeschichte. **6.45,** See **Vienna.** **7.0,** Bruckner Concert by the Leipzig Symphony Orchestra, conducted by Carl Schuricht. Overture in G Minor; Symphony in E, No. 7. After the Concert: Reading from Mark Twain. **9.15,** News Bulletin. **9.30** (approx.), Gramophone Concert: Overture, Maritana (Wallace); Two Melodies for Orchestra (Mendelssohn): (a) Spring Song, (b) Spinning Song; Violin Solos: (a) La Campanella, Op. 7 (Paganini), (b) The Bride's Song from The Czar's Bride (Rimsky-Korsakov); Breakfast Scene, Trio and Finale from Der Rosenkavalier (Richard Strauss); Songs: (a) Liebesliederwalzer (Joh. Strauss), (b) Theme with Variations (Proch); Extracts from Carmen (Bizet); Pianoforte Solo: Impromptu in A (Chopin); Hungarian Rhapsody in D, No. 4 (Liszt); Choral Music from The Mastersingers (Wagner); Soprano Solos: (a) Agatha's Prayer from Der Freischütz (Weber), (b) Aria from Figaro (Mozart); Overture, The Bartered Bride (Smetana). **11.0** (approx.), Close Down.

LINZ.—See **Vienna.**

LJUBLJANA

574.7 metres; 2.5 kW.—**5.30 p.m.,** Esperanto Lesson. **6.0,** Serbo-Croatian Lesson. **6.30,** Talk on Hygiene. **7.0,** See **Belgrade.** **9.30,** Time and News.

LWOW

381 metres; 16 kW.—**6.5 p.m.,** Miscellaneous Items. **6.20,** Variety Music on Gramophone Records. **6.30,** See **Warsaw.** **9.0,** Talk. **9.15,** Dance Music, relayed from the Bagatela Variety Theatre. **9.55,** See **Warsaw.** **10.30** (approx.), Close Down.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—**7.30 p.m.,** Radio Gazette for Lyons and the South-East. **8.30,** Concert arranged by Charles Strony, with Songs by Armand Crabbé (Baritone). After the Concert, News Bulletin.

MADRID

ARANJUEZ (EAQ), 30.43 metres; 20 kW.—**10.30 p.m.,** Variety Music. **10.45,** Radio Chronicle. **11.0,** Popular Concert. **11.45,** Sports and Bull-fighting Notes. **11.55,** Light Music. **12 Midnight** (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 424.3 metres; 2 kW.—**7.0 p.m.,** Chimes, Exchange Quotations and Request Gramophone Concert. **8.45,** News Bulletin. **8.30** (approx.), Close Down.

MALMO.—See **Stockholm.**

MILAN.—See **Turin.**

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—**5.30 p.m.,** German Transmission: Talk on Spinosa and a Sketch. **6.0,** See **Prague.** **6.5,** See **Brno.** **6.20,** Talk. **6.35,** See **Brno.** **7.0,** One-Act Play (Vrchlicky). **7.30,** See **Brno.** **9.0,** See **Prague.** **9.15** (approx.), Close Down.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—**4.0 p.m.,** News. **4.10,** Announcements. **4.30,** Concert. **5.30,** Concert of Light Music or a Relay. **8.0,** Talk in English: Doctrines of Marx and Lenin. **8.55,** Time. **9.0,** Relay of an Opera.

MOTALA.—See **Stockholm.**

MUHLACKER.—See **Stuttgart.**

MUNICH

533 metres; 60 kW. Relayed by **AUGSBURG** and **KAISERSLAUTERN, 560 metres;** and **NURNBERG, 239 metres.—4.0 p.m.** (from **Augsburg**), Concert by the Augsburg Concert Orchestra, conducted by Gustav Heuer, relayed from St. Anne's College. Four Pieces (Kistler): (a) Prelude to Act Four of Faust, (b) Minuet from Honigmond, Blumensegen from Baldurs Tod, Festmarsch; Overture, Beatrice and Benedict (Berlioz); Feast of the Capulets from Romeo and Juliet (Berlioz); Symphonic Poem, Tasso (Liszt). **5.15,** Talk: Sport, an Integral Part of the Modern World. **5.35,** Talk on the Saar. **5.55,** Time, Weather and Agricultural Notes. **6.5,** Sports Report. **6.25,** Bunte Stunde—Concert with a Sketch and Reading. **7.45,** Concert by the Munich Philharmonic Orchestra, conducted by Siegmund von Hausegger, relayed from the Tonhalle. Soloist: Alma Moodie (Violin). Spanish Symphony for Violin and Orchestra (Lalo): Suite from Le bourgeois Gentilhomme (R. Strauss). **8.55,** Late Evening in the Sports Editorial Department—a Radio Report. **9.20,** Time,

Weather, News and Sports Notes. 9.45, See Stuttgart. 11.0 (approx.), Close Down.

NAPLES.—See **Rome.**

NOTODDEN.—See **Oslo.**

OSLO

1,083 metres; 60 kW. Relayed by **FREDRIKSSTAD, 365.8 metres; HAMAR, 574.7 metres; NOTODDEN, 447.1 metres; PORSGRUND, 453.2 metres;** and **RJUKAN, 447.1 metres.**—**4.0 p.m.,** Concert by the Radio Ensemble. 5.0, German Lesson. 5.30, Chamber Music: Ernst Glaser (Violin), Oscar Holst (Violin), Bjarne Brüstad (Viola), and Karl Andersen (Cello). Quartet in C. No. 9 (Mozart); Berceuse (Brüstad); Scherzo (Alf Hurum). 6.0, Announcements, Weather and News. 6.30, Educational Talk, relayed from **Trondheim (495.8 metres).** 7.0, Time Signal. 7.1, Pianoforte Recital by Mlle. Ingebjörg Gresvik. 7.30, A Play. 8.10, Political Review. 8.40, Weather and News. 9.0, Topical Talk. 9.15, Orchestral Concert, relayed from **Stavanger (240.6 metres).** 9.45 (approx.), Close Down.

OSTERSUND.—See **Stockholm.**

PALERMO

542 metres; 3 kW.—**7.0 p.m.,** Announcements, Tourist Talk, Agricultural Notes, Report of the Royal Geographical Society, and Giornale Radio. 7.20, Light Music on Gramophone Records. In an interval at 7.30, Time Signal and Announcements. 7.45, Concert of Chamber Music: Gabriella Scala (Pianoforte), Pollicino (Tenor), Angelo Saporetti (Violin), and Lidia Attisani (Soprano). Pianoforte Solos: (a) Berceuse and Russian Song (Illuski), (b) Improvviso (Rossomandi). Tenor Solos: (a) Romance, Primavera (Tronchi), (b) Bimba non t'avvicinar (Bettinelli). Violin Solo: Sonata in F (Grieg); Soprano Solos: (a) Spring (Rachmaninov), (b) Träume (Wagner). Tenor Solos: (a) Air from Don Carlos (Verdi), (b) Romance from Act I of The Italian Girl in Algiers (Rossini); Violin Solos: (a) Prelude to Le déluge (Saint-Saëns), (b) Die Biene (Schubert); Soprano Solos: (a) Madama Renzuola (Donaudy), (b) Die Forelle (Schubert); Pianoforte Solos: (a) Ballad in G Minor (Chopin), (b) Serenade (Novak), (c) Marcia selvaggia (Florida). After the Concert, Light Music on Gramophone Records. 9.55, News Bulletin.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW.—Time Signal (on **2,650 metres**) at **9.26 a.m.** and **10.26 p.m.** (Preliminary and 6-dot Signals).—**5.45 p.m.,** Le Journal Parlé. 7.20, Weather Report. 7.30, Audran Operetta Concert, arranged by Maurice Bex and Henri Beaulieu: Selection from La Mascotte, Gillette de Marboune, and La Cigale et la Fourmi. 8.30, Recital of Celtic Songs: Les sabots d'aune de Bretagne; Ma douce Annette; Si vous voulez me marier; Le retour de marin; Quand celui qu t' adore; Celle qu j'aime Corbleu Marion; Blanche rose d'été; Au son du fifre. 9.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—**7.0 to 9.0 a.m.,** Probable Relay of the Test Match from Australia. 6.45 **p.m.,** Le Journal Parlé. 7.0, Hot Jazz on Gramophone Records. 7.30, Sponsored Concert. 8.0, Talk by Dr. Ombredane. 8.5, Talk on Aviation. 8.15, Interval. 8.30, Sponsored Concerts. 10.40, News.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—**6.45 a.m.,** Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Light Music on Gramophone Records. 8.0, Press Review and Weather. **12 Noon,** Concert by the Radio Paris Orchestra: Selection from I Puritani (Bellini); Selection from Gwendoline (Chabrier); La queste de Dieu from La Légende de St. Christophe (d'Indy). 12.30 **p.m.,** Variety Music on Gramophone Records. 1.0, Exchange, News and Weather. 1.5, Song Recital by Robert Marino. 1.30, Exchange. 1.35, Orchestral Concert (contd.): Scènes Hongroises (Massenet); Divertissement on Russian Songs (Rabaud). 2.0, Exchange. 3.45, Exchange and Market Prices. 6.10, Agricultural Talk. 6.30, Elementary English Lesson. 6.50, Talk: Comedy on the Films. 7.0, Review of New Books. 7.20, Concert by the Radio Paris Orchestra: Prélude, Le passant (Paladilhe); First Ballet Suite (Masson); Tournoi (Boellmann). 7.45, Commercial Prices and News. 7.50, Gardening Talk. 8.0, Othello—Opera (Verdi). In the intervals at 8.30, News, Weather and Sports Notes; at 8.40, Review by Reboux; and at 9.15, Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW. Relayed by **W8XK** on **48.86 metres** and **25.27 metres.**—**9.0 p.m.,** Work-a-day Thoughts. 9.5, Business News. 9.15, Programme to be announced. 9.30, Weather Report. 9.32, Market Report. 9.45, Pianoforte Interlude. 9.50, David Lawrence Dispatch. 9.55, KDKA Artist Bulletin. 9.57, Programme Announcements. 10.0, Programme to be announced. 10.30, The Singing Lady, from **New York.** 10.45, Little Orphan Annie. 11.0, Maude and Cousin Bill, from **New York.** 11.15, Time Signal. 11.16, Temperature Report. 11.17, Teaberry Sport Review. 11.22, Press News-Reeler. 11.27, Strange Facts. 11.29, Weather Report. 11.30, Westinghouse Watchmen. **11.45 to 3.15 a.m. (Tuesday), New York** Relay. 11.45, To-day's News, by Lowell Thomas. 12.0 **Midnight,** Pepsodent Amos 'n' Andy. 12.15 **a.m.,** Tastyeast Jesters. 12.30, Five Star Theatre, by the Marx Brothers. 1.0, Cliquot Club Eskimos. 1.30, Time Signal and Don Carney—a Talk for Dog Lovers. 1.45, Phillips Lord in The Country Doctor. 2.0, Sinclair Minstrels. 2.30, Jack Frost Melody Moments. 3.0, Alice Joy. 3.15, Bridge School of the Air, by E. Hall Downes. 3.30, Samuel Di Primio (Tenor). 3.45, Bradley Kincaid. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.13, KDKA Artist Bulletin. 4.15, Press Last Minute News. 4.20, Henry Halstead and his Californians. 5.0, Hotel Bismarck Orchestra, from **New York.** 5.30, Time Signal and Goodnight.

PORSGRUND.—See **Oslo.**

PRAGUE

488.6 metres; 120 kW.—**3.10 p.m.,** See **Bratislava.** 4.10, Talk: The Czech National Museum. 4.20, Technical Talk. 4.30, Programme for Children. 4.50, Gramophone Records of Light Music. 5.5, Agricultural Talk. 5.15, Talk for Workers. 5.25, News in German. 5.30, German Transmission: Natural History Talk. 6.0, News. 6.5, Elementary English Lesson. 6.20, See **Moravská-Ostrava.** 6.35, See **Brno.** 7.0, Pianoforte Recital by F. Lukasiewicz: Variations in G Minor (Beethoven); Pastorale and Capriccio (Scarlatti-Tausig); Three Pieces (Chopin): (a) Polonaise in F Sharp Minor, Op. 44, (b) Waltz in D Flat, Op. 64, (c) Scherzo in B Minor, Op. 35. 7.30, See **Brno.** In the interval at 8.0, Time Signal. 9.0, Time, News, Press Review, and Sports Notes. 9.15 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres, 25 kW.; **LAUSANNE, 650 metres;** and **GENEVA, 760 metres.**—**5.0 p.m.,** Programme for Children. 5.30 (from **Lausanne**), German Lesson. 6.0 (from **Geneva**), Weather, News and Report on the Work of the League of Nations. 6.30 (from **Lausanne**), Technical Lesson. 7.0 (from **Lausanne**), Pianoforte Recital. 7.20 (from **Lausanne**), Talk on the following Transmission. 7.35 (from **Lausanne**), Symphony Concert by the Radio Orchestra, conducted by Franz von Hoesslin. Soloist: Edmond Appla (Violin). Symphony in G Minor (Mozart); Concerto in D for Violin and Orchestra (Bach); Symphony No. 1 in C Minor (Brahms). 8.15 (in the interval), News and Weather. 9.15 (approx.), Close Down.

RIGA

525 metres; 15 kW.—**6.5 p.m.,** Orchestral Concert of French Music. 7.0, News. 7.20, Soprano Solos by Ada Benefields. 7.40, Orchestral Concert of Popular Music. 8.0, Weather and News. 8.30, Concert: Overture, The Flying Dutchman (Wagner); Prologue to I Pagliacci (Leoncavallo); Air from Othello (Verdi); Air from Madame Butterfly (Puccini); Humoresque (Tchaikovsky); Air from La Traviata (Verdi). 9.30 (approx.), Close Down.

RJUKAN.—See **Oslo.**

ROME

Call 1RO, 441 metres; 50 kW. Relayed by **Naples, 319 metres,** and **2RO, 25.4 to 80 metres.**—**7.0 a.m.,** Gymnastics. **7.15 to 7.30,** Giornale Radio and Announcements. **11.30,** Weather and Light Music on Gramophone Records. **12 Noon,** Time and Announcements. **12.2 to 1.15 p.m.,** Orchestral Concert. In the interval from **12.30 to 12.45,** Giornale Radio and Exchange. 3.45, Children's Radio Review. 4.10, Announcements. 4.15, Exchange and Giornale Radio. 4.30, 'Cello Recital by Enrico Mainardi, relayed from the Royal Philharmonic Academy. 6.0, Giornale Radio. 6.10 **(Naples),** Shipping, Sports Notes and Report of the Dopolavoro. 7.0, Time, Announcements and Light Music on Gramophone Records. 7.30, Sports Notes and Tourist Report. 7.45, Concert of Light Music. In the intervals, Talk and Announcements. 9.55, News Bulletin.

SALZBURG.—See **Vienna.**

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 379.5 metres; 50 kW. Relayed at intervals by **W2XAF** on **31.48 metres,** and by **W2XAD** on **19.56 metres.**—**7.30 p.m.,** Revolving Stage, from **New York.** 8.0, Talk, from **New York.** 8.15, Antoinette Halstead (Contralto). **12 Midnight,** Jane Froman, from **New York. 12.15 a.m. (Tuesday),** Stock Reports. **12.30 to 2.0, New York** Relay. 12.30, Melody Keepsakes. 12.45, The Goldbergs. 1.0, Sconyland Sketch. 1.30, Voice of Firestone. 2.0, A. and P. Gipsies. 2.30, Buick Programme and Programme Resumé.

SCHWEIZERISCHER LANDESSENDER

BEROMUNSTER, 459 metres; 60 kW.; **BASLE, 244.1 metres;** and **BERNE, 245.9 metres.**—**9.20 a.m.,** Musical Programme for Schools. **9.50 to 11.28,** Interval. 11.28, Time Signal from Neuchâtel Observatory. 11.30, Weather and News. 11.40, Variety Music on Gramophone Records. 12.35 **p.m.,** Weather and Exchange. **12.45 to 2.30,** Interval. 2.30, Concert by the Radio Orchestra. 3.0 (from **Basle**), Concert by the Radio Quintet. 4.0, Swiss Authors on Gramophone Records. 4.30, Weather. **4.35 to 5.30,** Interval. 5.30 (from **Zürich**), Talk, Everyday Psychology. 6.0, Time and Weather. 6.15 (from **Zürich**), Elementary English Lesson. 6.45 (from **Zürich**), Talk on the following Transmission. 7.0 (from **Zürich**), Wagner Concert by the Tonhalle Orchestra, conducted by Dr. Volkmar Andreae, relayed from the Tonhalle: Soloists, Elisabeth Delius (Soprano) and Franz Völker (Tenor). 9.0 (approx.), Weather, News, and Close Down.

SOTTENS.—See **Radio-Suisse Romande.**

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by **Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,348 metres; Ostersund, 770 metres;** and **Sundsvall, 542 metres.**—**4.5 p.m.** (from **Ostersund**), Provincial Programme: Readings and Music. 4.30, Talk. 4.55, Popular Music on Gramophone Records. 5.55, Reading. 6.30, Literary Review, relayed from **Malmö, 231 metres.** 7.0, Concert by the Station Orchestra. Soloist: Hugo Kolberg (Violin); Overture, Cosi fan tutte (Mozart); Concerto in D, Op. 35, for Violin and Orchestra (Tchaikovsky); The Unfinished Symphony in B Minor (Schubert); Overture, the Bartered Bride (Smetana). 8.15, Talk. 8.45, Weather and News. 9.0 (from **Göteborg**), Concert. Folke Lundborg (Organ), Karl Bornfors (Violin), and Emma Werther-Carlsson (Songs): Organ Solo: Prelude in E Flat (Bach); Aria from The Messiah (Handel); Adagio from the Violin Concerto in A (Mozart); Three Songs; Violin Solos: (a) Largo (Veracini), (b) Berceuse (Juon); Organ Solo: Passacaglia in F Sharp Minor (Merikanto). 10.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—**11.30 a.m.,** Operetta Music on Gramophone Records. 12.45 **p.m.,** News Bulletin. 1.0, Time and Exchange. 1.5, Quintet Concert, relayed from **Bordeaux-Lafayette.** 1.50 to 5.0, Interval. 5.0, Orchestral Concert, conducted by Roskam. Soloist: M. Grégoire (Violin); Motor March (Rosey); Waltz from Eva (Lehar); Airs (Chaminade): (a) Idylle Arabe, (b) La chaise aux porteurs; Overture, Die Felsenmühle (Reissiger); Violin Solo: Légende (Wieniawsky); Selection from Cocorico (Ganne); A Wedding Day on Troldhaugen (Grieg); March (Blankenburg). 6.0, Literary Review. 6.15, Topical Talk. 6.30, Orchestral Concert, conducted by Maurice de Villers; Overture, Cosi fan tutte (Mozart); Ballet Music from Alceste (Gluck); Military Symphony (Haydn); Melodies (Mendelssohn): (a) Canzonetta, (b) Spinning Song; Overture, Manfred (Schumann). 7.30, Time and News. 7.45, Dance Music, conducted by M. Roskam. 8.25, Lottery Results. 8.30, Concert of Music by Pierre Bretagne, relayed from the Exchange Hall, Nancy. Soloists: Suzanne Nicolas (Soprano), Mlle. Grisoli (Mezzo-Soprano), M. Moraux ('Cello), M. Taëlmann (Pianoforte), and M. Stimpfling (Songs); Sonatina in E Flat for Pianoforte; Songs from Les Voeux secrets: (a) Nous avons respiré sur la lande marine, (b) Tu viendras un jour, (c) Je me sens près de vous à cause d'une fleur, (d) Ton silence ma bien-aimée; Soprano Solos: (a) Air from Fontius Pilate, (b) Soir d'Eté; Adagio and Finale from the Sonata in G for 'Cello and Pianoforte; Songs from Images de mon pays: (a) Le cimetière, (b) Les deux auberges, (c) Symphonie d'automne; Duets for Soprano and Mezzo-Soprano: (a) La source, (b) Les chèvres. 10.15 (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and **FREIBURG, 570 metres.**—**12.30 p.m.,** Dusolina Giannini sings on Gramophone Records. 1.0, Sponsored Music. 1.15, Sponsored Music, relayed from **Karlsruhe.** 1.30, Spanish Lesson. 2.0, English Lesson for Beginners. 2.30 to 4.0, Interval. 4.0, Gramophone Concert: Overture, Der Schauspieldirektor (Mozart); Three German Dances (Mozart); Introduction and Tarantella (Sarasate); Sarabande (Mouret); Selection from The Tales of Hoffmann (Offenbach); Duet from Aida (Verdi); Extracts from the Italian Caprice (Tchaikovsky); Concert Transcription of Wiener Blut, after Strauss (Szreter); Two Pieces (Rathke): (a) Zwerg-Patronille, (b) Pan und Waldschritt; Selection from The Flower of Hawaii (Abraham); Second Waltz Potpourri (Rolrecht); March, Durch Nacht zum Licht (Laukien). 5.15, Time, Weather, and Agricultural Notes. 5.25, Talk on Economics. 5.50, See **Frankfurt.** 6.15, Time, News, and Variety Music on Gramophone Records. 6.45, Report on the First Day of the International Ski-ing Championship in Innsbruck. 7.5, See **Frankfurt.** 9.30, Time, News, Weather, and Programme Announcements. 9.45, Chess Lesson. 10.10, Dance Music by the Dance Band of the Philharmonic Orchestra, conducted by Harry Risch: Soloist, Gerda Hansi (Soprano). 11.0 (approx.), Close Down.

SUNDSVALL.—See **Stockholm.**

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—**5.0 p.m.,** Hawaiian Guitar Music. 5.15, Market Prices and Racing Results. 5.20, Chansonnettes. 5.30, Opera Music: Prelude and Fileuse from Pelléas et Mélisande (Debussy); Selection from Il Trovatore (Verdi). 5.45, Instrumental Solos. 6.0, News. 6.15, Opera Music: Aria from I Pagliacci (Leoncavallo); Gavotte from Manon (Massenet); Berceuse from Louise (Charpentier); Swallows' Duet from Mignon (Thomas). 6.30, Overture, Patric (Bizet). 6.45, Accordion Music. 7.0, Tourist Report. 7.15, Racing Results, Market Prices and News. 7.25, Local News. 7.30, Chansonnettes. 7.45, Concert by a Viennese Orchestra. 8.15, Extracts from Sound Films. 8.30, Concert of Soldiers' Songs and Military Marches. 9.0, Violin Solos: Minuet (Dussek); Rondo (Weber); Serenade (Drdla). 9.15, Popular Melodies: Griserie (Bosc). 9.30, Concert of Opera Music: Selection from: (a) The Damnation of Faust (Berlioz), (b) Lohengrin (Wagner), (c) L'Enfant Prodigue (Debussy); The Flower Song, from Carmen (Bizet); Like a Feather in the wind, from Rigoletto (Verdi); Aria from Louise (Charpentier). 10.0, Talk: The Care of the Blind. 10.10, Orchestral Music. 10.15, North African News. 10.30, Concert for Listeners in Morocco: Overture, Sicilian Vespers (Verdi); Chorus from Mireille (Gounod); Selection from La Fille de Madame Angot (Lecocq); Song from a Sound Film (Holländer). 11.0, Request Concert. 11.30, Programme in English by the I.B.C. Concert of Classical Music: Classical Memories; Contralto Solos: (a) Ave Maria (Bach), (b) Ombra mai fu (Handel); Selection from Rigoletto (Verdi); Tenor Solos: (a) How vain is Man (Handel), (b) Where'er you walk (Handel); Selection from Rigoletto (Verdi). **12 Midnight,** News and Announcements. 12.5 **a.m. (Tuesday),** Vocal Tangos. 12.15, Dance Music. 12.30 (approx.), Close Down.

TRIESTE

247.7 metres; 10 kW.—**6.30 p.m.,** Orchestral Concert from the Caffè Dante. 7.0 till Close Down. See **Turin.**

TRONDHEIM.—See **Oslo.**

TURIN

273.7 metres; 7 kW. Relayed by **Milan, 331.5 metres; Genoa, 312.8 metres,** and **Florence, 500.8 metres.**—**6.0 p.m.,** Giornale Radio. 6.10, Popular Music on Gramophone Records. 6.25, Tourist Talk. 6.30, Time, Announcements and Popular Music on Gramophone Records. 7.0, Giornale Radio and Weather. 7.30, Chamber Music Concert. 8.20, A One-Act Comedy. 9.0, Orchestral Concert, conducted by Ugo Tansini: Overture, Prometheus (Beethoven); Petite Suite (Debussy); Valse triste (Sibelius); Minuet, Musette and Gavotte (Handel-Martucci); Tarantella (Godard). 10.0, Giornale Radio.

VATICAN CITY

19.84 metres (Morning), and **50.26 metres (Evening);** 10 kW.—**10.0 to 10.15 a.m.,** Religious Information in Italian. 7.0 to 7.15 **p.m.,** Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by **Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 245.9 metres,** and **Salzburg, 218.5 metres.**—**4.0 p.m.,** Concert by the Franz Eber Orchestra: Sportmarsch (Siess); Overture to a Comedy (Glickh); Waltz, Ballettfratzen (Keck); Selection from The Mask (Hubay); Ja, wer ist schuld, wenn ma a Dummheit macht? (Götz); Humoresque; Froschhochzeit (Beil); Potpourri of Sound Film Melodies (Borchert); Tango, Ist dein kleines Herzchen mir treu? (Eisele); Gallop, Raus (Eber). 5.10, Dramatic Criticism. 5.30, Talk: Books of Reference in Connection with the Week's Talks. 5.35, Talk: The Baroque Period in Music and Plastic Art. 6.0, Talk in connection with the Visit of Prominent Members of the Vienna State Opera House to Cairo, relayed from Cairo. 6.20, English Lesson. 6.35, Time, Weather and Programme Announcements. 6.45, Report on the International Ski-ing Championships at Innsbruck. 7.5, See **Frankfurt.** 8.20, See **Berlin (Witzleben).** 9.15, News, Weather and Announcements. 9.30, See **Langenberg.** 11.0 (approx.), Close Down.

WARSAW

1,411 metres; 120 kW.—**4.0 p.m.,** Chamber Music Concert by B. Kon (Pianoforte) and T. Ochlewski (Violin): Sonata in D, Op. 6 (Brzezinski); Sonata in F Sharp Minor, Op. 18 (Wertheim). News in the Interval. 5.0, Light Music from the Café Italia. News in the interval. 5.50, Miscellaneous Items. 6.20, Agricultural Correspondence. 6.30, On the Horizon. 6.45, Radio Journal. 7.0, Carnival of Love—Operetta in Three Acts (Walter Bromme). In the intervals, Sports Notes and Radio Journal. 9.0, Answers to Technical Correspondence. 9.15, Dance Music from **Lwów (381 metres).** 9.55, Aviation Weather Report and Police Notes. 10.0, Dance Music from the Adria. 11.0 (approx.), Close Down.

ZURICH.—See **Schweizerischer Landessender.**

TUESDAY

FEBRUARY THE SEVENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL — Military Band concert. Professor Cyril Burt: "Social Psychology." "Hassan," Part 1, a play by James Elroy Flecker.

LONDON REGIONAL — Concert from the Houldsworth Hall, Manchester. Instrumental programme. Choral concert. Pianoforte and violoncello recital. "Nine-thirty Novelties," feature programme.

MIDLAND REGIONAL — "Saturday Night," a play by Philip Johnson, from the Repertory Theatre, Birmingham. Orchestral concert. "Melody," a gramophone recital. "Nine-thirty Novelties," feature programme.

NORTH REGIONAL — Concert from the Houldsworth Hall, Manchester. Violin recital. Organ music. Liverpool Philharmonic Society's concert.

WEST REGIONAL — A Gloucestershire programme, orchestral and vocal.

SCOTTISH REGIONAL — Music by Bizet, orchestral concert. Lessons in Scottish Country Dancing, with musical illustrations, by Mr. J. M. Duthie. A choral recital.

BELFAST — Light music. Dance music. Light orchestral concert.

ABROAD

BRUSSELS (No. 1) — Borodin concert, by the Symphony Orchestra, conducted by M. Meulemans.

HAMBURG — The Norag Orchestra, conducted by Horst Platen.

PALERMO — Opera: "Rigoletto" (Verdi), on gramophone records.

STUTTGART — The Philharmonic Orchestra, conducted by Emil Kahn.

BARCELONA

RADIO-BARCELONA, Call EAJ1, 348.8 metres; 8 kW.—**8.0 p.m.,** Trio Concert. **7.0,** Request Gramophone Records. **7.30,** Talk on the History of Art, and Exchange Quotations. **8.0,** Popular Music on Gramophone Records and News. **9.0,** Chimes from the Cathedral, Weather, Messages to Seamen, Exchange Quotations, and Market Prices. **9.10,** Part Relay of an Opera from the Gran Teatro del Licco. **11.0** (in an interval), News Bulletin. **12 Midnight** (approx.), Close Down.

BARI

269.8 metres; 20 kW.—**7.0 p.m.,** Agricultural Notes, Tourist Report and Announcements. **7.20,** Giornale Radio and Weather. **7.30,** Time, Announcements and Popular Music on Gramophone Records. **7.45,** Relay of an Opera from the Teatro Petruzzelli. In the interval, Literary Review, Talk and Announcements. After the Opera, News.

BASLE.—See **Schweizerischer Landessender.**

BELGRADE

430.4 metres; 2.5 kW.—**6.0 p.m.,** Song Recital: Arias from (a) Julius Cæsar, (b) Judas Maccabaens, and (c) Il Pastor Fido (Handel); Three Yugoslav Songs. **6.30,** Light Music on Gramophone Records. **7.0,** Concert by the Zagreb String Quartet and Frau Staua Ribnika (Pianoforte); Quartet in A, Op. 33 (Boccherini); Quartet (Slavensky); Pianoforte Quintet (Schumann). **8.15** (approx.), Concert from **Zagreb (307 metres).** **9.0,** News, followed by Cigány Music from the Potrosacka Zadruga Restaurant.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—**11.55 a.m.,** Nauen Time Signal. **12.35 p.m.,** News Bulletin. **1.0,** Gramophone Concert of Classical Music, relayed from **Berlin (Witzleben).** **2.0,** Talk for Young People. **2.30,** Weather and Exchange. **2.45,** Tales from Swabia. **3.0,** Talk for Women. **3.30,** See **Leipzig.** **4.10,** Topical Talk. **4.30,** Old Chamber Sonatas: Sonata in D Minor (De Fesch); Sonata in G Minor (Henry Eccles). **5.0,** Talk: Political Science as a Counsellor in the Crisis. **5.30,** How to play Bach, by Willi Apel. Chromatic Fantasia, Italian Concerto, Suites and Partitas. **5.55,** Weather and Announcements. **6.0,** Talk: Greek Drama and the People of To-day (1)—Aeschylus. **6.30,** A Poem. **6.35,** Political Press Review. **7.0,** Dance Music from **Heilsberg.** **8.0** (approx.), Flowers, Animals and Children—A Radio Sequence from Ernst Kreidolf's Picture Books (Ursula Scherz and William Wauer. **8.45,** Studies of Musicians, by Dr. Nikolaus Feinberg. **9.30,** Weather, News and Sports Notes. **9.45,** Weather Report for Shipping, followed by Concert from **Hamburg.** **11.0** (approx.), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—**6.0 p.m.,** Topical Talk. **6.10,** Concert of Light Music by the Eddy Walis Band, relayed from the Eden Pavilion. **7.30,** Literature becomes Reality—A Speech by Rudolf Alexander Schröder. **8.0,** Beethoven Concert by the Berlin Wireless Orchestra, conducted by Eugen Jochum. Soloist: Edwin Fischer (Pianoforte). Pianoforte Concerto in C Minor, Op. 37; Symphony in D, Op. 36. **9.10,** Weather, News and Sports Notes. **9.30,** See **Hamburg.** **11.0** (approx.), Close Down.

BERNE.—See **Schweizerischer Landessender.**

BEROMUNSTER. — See **Schweizerischer Landessender.**

BODEN.—See **Stockholm.**

BODO.—See **Oslo.**

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—**7.40, p.m.,** Colonial Notes. **7.45,** Light Music on Gramophone Records. **7.55,** Lottery Results. **8.0,** Talk. **8.15,** News Bulletin. **8.30,** Carmen—Opera (Bizet), relayed from **Marseilles (315 metres).** After the Relay, Entertainments Guide and Time Signal.

BRATISLAVA

279 metres; 14 kW.—**5.15 p.m.,** Concerto in G Minor for Viola and Pianoforte (Forsyth). **5.45,** Slovak Spelling Lesson. **6.0,** See **Prague.** **6.20,** Song Recital by A. Rechnitzova: The Nursery—Seven Pictures of Child Life (Mussorgsky). **6.50,** Introductory Talk to the following Transmission. **7.0,** Symphony Concert, conducted by Karel Nedbal, relayed from the Slovak National Theatre. **9.0,** See **Prague.** **10.0** (approx.), Close Down.

BREMEN.—See **Hamburg.**

BRESLAU

325 metres; 60 kW.; and **GLEIWITZ, 253 metres.**—**12.5 p.m.,** Weather for Farmers. **12.7,** Popular Music on Gramophone Records. **12.45,** Time, Weather, News, and Exchange Quotations. **1.5,** Gramophone Concert: Lehár Potpourri; Es liegt ein Traum auf der Heide (Fielitz); Caprice viennois (Kreisler); Klänge aus der Heimat (Gungl); Potpourri, Von Wien durch die Welt (Marischka-Karczag); Waltz, Frühlingsstimmen (Joh. Strauss-Bass); Waltz, Aus dem Hochwald (Kaulich); Vöslauer Pupperln (Dietrich). **1.45,** Sponsored Programme, with Gramophone Records. **2.10,** Agricultural Prices. **2.40,** Programme for Children. **3.10,** 'Cello and Song Recital by Pepo Eiscit and Maria Schmidt (Contralto); Melody (Gluck); Rondo (Boccherini); Songs (Schubert): (a) Ganymed, (b) Suleika, (c) Mignonlieder Nos. 1 and 2; Minuet (Beethoven); Songs (H. Wolf): (a) Lebewohl, (b) Weylas Gesang, (c) Verborgenheit, (d) Der Gärtner; Songs (Eisels): (a) Wiegenlied, (b) Nocturne; Scherzo (van Goëns); Le Cygne (Saint-Saëns). **4.0,** Review of English Novels. **4.20,** Agricultural Prices. **4.25,** August Friedrich Krause, a Forgotten Silesian Author—Talk and Recitations from his Works. **5.0,** Programme to be Announced. **5.40,** Wireless Notes. **5.50,** Talk: Metabolic Diseases. **6.20,** Soloist Concert on Gramophone Records: Passepied in E Minor from English Suite (Bach); Fantasia in C Minor (Bach); Rondino on a Theme by Beethoven (Kreisler); Allegro in A (Boccherini); Andante and Finale from the Flute Concerto in C (Mozart); Romance in A (Schumann); Song without Words (Mendelssohn); Rhapsody in B Minor (Brahms). In the interval at **6.35** (approx.), Weather for Farmers. **7.0,** A German Requiem, Op. 45, for Soloists, Choir, and Orchestra (Brahms), relayed from the Concert House. **8.40,** Political Press Review. **9.0,** Time, Weather, News, Sports Notes, and Programme Announcements. **9.25,** Theatre Talk. **9.35,** Talk on the Fire Brigade. **10.5,** Concert from **Hamburg.** **11.0** (approx.), Close Down.

BRNO

342 metres; 35 kW.—**4.20 p.m.,** See **Prague.** **4.50,** Esperanto Lesson. **5.0,** Music Review. **5.15,** Talk for Workers. **5.25,** German Transmission: News, Talk and Agricultural Report. **6.0,** See **Prague.** **6.20,** A Sketch (Svobodová). **6.45,** See **Moravská-Ostrava.** **7.40,** See **Prague.** **8.10,** Concert by the Station Orchestra, conducted by Jan Janota. Soloist: Josef Bok (Flute). Overture (Sebor); Flute Concerto (Blodek); Serenade in D (Hrimaly); Ballet Music from Cinderella (Rozkosny). **9.0,** See **Prague.** **10.0** (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—**12 Noon,** Extracts from Der Rosenkavalier—Opera (Richard Strauss) on Gramophone Records. **12.15 p.m.,** Debussy Concert, on Gramophone Records: Fêtes from the Nocturnes; Valse romantique; Reflets dans l'eau; Three Preludes: (a) La Cathédrale engloutie, (b) Minstrels, (c) Ondine; Rhapsody for Orchestra and Saxophone. **1.0, Le Journal Parlé. 1.10,** Concert by the Small Station Orchestra, conducted by Paul Leemans: Petite suite enfantine (Akron); 'Cello Solo: Berceuse (Renard); Suite for Strings and Pianoforte (Olsen); Violin Solo: Rondo (Saint-Saëns); Selection from La Gioconda (Ponchielli). **5.0,** Concert by the Station Orchestra, conducted by Franz André: Selection from A Waltz Dream (Oscar Straus); Waltz, Tales from the Vienna Woods (Johann Strauss), Perpetuum Mobile (Johann Strauss). **6.30,** Programme for Children. **6.5,** Literary Talk. **6.15,** Light Music on Gramophone Records. **6.30,** Concert of Sacred Music. **7.15,** Catholic Review. **7.30,** Talk for Women. **8.0,** Borodin Concert by the Symphony Orchestra, conducted by M. Meulemans: Soloist: Alex Siline (Songs); In the Monastery; Nocturne; In the Steppes of Central Asia; Overture, Prince Igor; Two Songs from Prince Igor; Polovtsian Dances. **9.45,** Religious Address. **9.0,** Symphony Concert, conducted by M. Meulemans: Soloist: Jet Dussart (Clarinet); Overture, Oberon (Weber); Clarinet Solo: Concertino (Weber); Letzter Gedake (Weber); Oriental Fantasia (d'Ollone); Clarinet Concerto (Mozart); Suite from Les Indes galantes (Rameau)). **10.0,** Le Journal Parlé. **10.10,** Request Gramophone Concert: Overture, Rosamund (Schubert); In the Mystic Land of Egypt (Ketelbey); The Moonlight Sonata (Beethoven). **10.30,** Classical Music on Gramophone Records. **10.55,** Pontifical Hymn. **11.0** (approx.), Close Down.

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW.—Programme in Flemish. **12 Noon,** Concert by the Small Station Orchestra, conducted by P. Leemans: Cortège (Ippolitov-Ivanov); Strauss Potpourri (Winter); Träume (Wagner); Violin Solo: Guitar (Moszkowsky-Sarasate); Selection from Robert the Pirate (Romberg); Waltz, C'est bon de pouvoir se griser (Sylviano); Foxtrot, Flapperette (Greer); Tango (Moretti); Selection from The Carnival Fairy (Kálmán). **1.0 p.m.,** Le Journal Parlé. **1.10,** Popular Music on Gramophone Records. **5.0,** Concert by the Symphony Orchestra, conducted by Meulemans: Overture, Coriolanus (Beethoven); Danse dorienne (Guittard); Little Polonaise (Dejoncker); Humoresque (Demalet); Laguren-Walzer (Strauss); Petite Suite de Concert (Coleridge-Taylor). **5.45,** Programme for Children. **6.30,** Concert by the Small Station Orchestra, conducted by P. Leemans: French Comedy Overture (Kéler-Béla); Petite Suite (Chaminade); Hornpipe (Norman O'Neill); Album de jeunesse for Pianoforte (Meulemans); Aubade à Kiki (De Boeck); Slav Potpourri, Solojanka (Wilke). **7.15,** Talk. **7.30,** Le Journal Parlé. **8.0,** Variety Programme: Dramatic Items, Orchestral Music, and Talk by M. Bert Witte. **10.0,** Le Journal Parlé. **10.10,** Popular Music on Gramophone Records. **11.0** (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—**4.0 p.m.,** Concert of Light Music and Romanian Music by the Motoi Orchestra. **5.0,** News and Time Signal. **5.10,** Talk. **5.25,** Concert by the Motoi Orchestra. **6.0,** Talk on Romania: Her Prairies. **6.40,** Popular Music on Gramophone Records. **7.0,** Time Signal. **7.2,** The Creation—Oratorio (Haydn), relayed from the Athenæum by the Carmen Choir and the Station Orchestra. Soloists: Mme. Rosi Baumann-Radulesco, G. Folesco (Bass), and A. Alexandresco (Tenor). **9.15,** News.

BUDAPEST

550 metres; 18.5 kW. Programme also relayed on **840 metres** from **6.25 to 11.0 p.m.**—**3.0 p.m.,** Gramophone Concert: Selection (from Figaro (Mozart); Ständchen (Schubert); Selection from The Tales of Hoffmann (Offenbach); Elégie (Massenet); Selection from Ernani (Verdi); Il bacio (Arditi); Selection from Tosca (Puccini); Selection from Cavalleria rusticana (Mascagni); Viennese Song from Lilac Time (Schubert-Berté); Waltz, Tales from the Vienna Woods (Joh. Strauss); Isn't it romantic? (Rodgers); Verita de Nardo (Pardavé); Lullaby of the Leaves (Petkere-Young). **4.0,** Talk on the British Empire. **4.30,** Dance Music from the Hotel Dunapalota, with Ernst Horvath in his Repertoire. **5.0,** Reading. **5.20,** Choral Concert. **6.0,** Programme by Ernst Mihalyffy. **6.30,** Dohnanyi Concert, from the Royal Hungarian Opera House: The Tenor—Comic Opera in Three Acts; The Veil of Pierrette—Pantomime in Three Scenes. In the intervals, News. After the Programme, Cigány Concert from the Hotel Dunapalota. **11.0** (approx.), Close Down.

CASSEL.—See **Frankfurt.**

COPENHAGEN

281 metres; 0.75 kW.; and **KALUNDBORG, 1,153 metres;** 7.5 kW.—**11.0 a.m.,** Time and Chimes from the Town Hall. **11.5,** String Ensemble Concert, conducted by Harald Andersen, relayed from the Bellevue Strandhotel. **1.0 to 2.0 p.m.,** Interval. **2.0,** Concert by Mogens Hansen's Instrumental Ensemble: Soloist: Erik Westh (Songs); Moment musical (Schubert); Overture, Rosamund (Schubert); Selection from Sommerfugle (Johs. Andersen); Vaar (Thor Ibsen); Invoi (Thor Ibsen); Selection from Madame Butterfly (Puccini); Seven Songs; Overture, Queen for a Day (Adam); Waltz, Dolores (Waldteufel); Selection from The Merry Widow (Lehar); In the Shadows (Finck); Melody from Countess Maritza (Kálmán). **4.0,** Programme for Children. **4.40,** Exchange and Fish Market Prices. **4.50,** Talk on Soviet Russia. **5.20,** German Lesson. **5.50,** Weather Report. **6.0,** News. **6.15,** Time Signal. **6.30,** Talk: The Danish National Character. **7.0,** Chimes from the Town Hall. **7.5,** Heimat—Drama in Four Acts (Sudermann). **9.0,** News. **9.15,** Concert of Scandinavian Music: The Station Orchestra, conducted by Emil Reesen; Suite ancienne (Halvorsen); Selection from Gurre (Horneman); Swedish Rhapsody, Midsommarvaka (Alfven). **10.0,** Dance Music from the Ritz Restaurant. In the interval at **11.0,** Time and Chimes from the Town Hall. **11.30** (approx.), Close Down.

CORK.—See **Dublin.**

DANZIG.—See **Heilsberg.**

DRESDEN.—See **Leipzig.**

DUBLIN

Call 2RN, 413 metres; 1.2 kW.; and **CORK, 224.4 metres.**—**1.30 to 2.0 p.m.,** Time Signal, Weather Report, Stock Report, and Light Music on Gramophone Records. **6.0,** Popular Music on Gramophone Records. **6.15,** Programme for Children. **7.0,** Light Music on Gramophone Records. **7.15,** News and British Market Report. **7.30,** Time Signal. **7.31,** Gaelic Talk. **7.45,** Talk. **8.0,** Symphony Concert, relayed from the Mansion House: Conductor: Dr. V. O'Brien. **10.30,** Time Signal, News, Weather Report, and Close Down.

FECAMP

223 metres; 10 kW.—**6.0 to 7.0 p.m.,** Programme in English by the I.B.C. **6.0,** Concert. Part I, Orchestral Music: March from Tannhäuser (Wagner); Air gai (Gluck-Mottl); Selection from Suzanna's Secret (Wolf-Ferrari); Deep River (Schubert-Barlow); Furiant from The Bartered Bride (Smetana); Rustle of Spring (Sinding); Finale from the First Symphony (Beethoven). Part II: Songs of the Sea: Over the Waves (Rosas); Songs: (a) At Santa Barbara (Kennedy Russell), (b) The Drunken Sailor (Ferry); Selection from Merrie England (German); Songs: (a) Four Jolly Sailormen (German), (b) Shenandoah (Terry); Gold and Silver (Lehár). **10.0** till Close Down, Programme in English by the I.B.C. **10.0,** Dance Music: Lights of Paris; It always starts to rain; It happened in Monterey; Just a little closer; Linda; I don't mind walking in the Rain; Little Painted Doll; Got the Bench, got the Park; The Waltz you saved for me; Smile, darn ye, smile; Carry on; My Cradle is the Desert; With my Guitar and yon; Lazy Day; Jolly Good Company; Swingin' in a Hammock. **11.0,** Orchestral

and Vocal Concert of Welsh Music: Welsh Medley (arr. Somers); Songs: (a) Y Bugail, (b) Alleluia; Chorus, March of the Men of Harlech; Songs: (a) Y Gwew ar y fedwen, (b) My little Welsh Home; Britelodia (Humphries). **11.30,** Orchestral Concert: Musical Gems (Shalmar); Barcarolle from The Tales of Hoffmann (Offenbach); Black Eyes (Ferraris); The Wayside Shrine (Sherwood); Dream of Love after the Ball (Czibulka); Around the Volga (Borchert). **12.0 Midnight,** Songs: Wishing and waiting for love; Just Plain Folk (Gilbert); Am I blue? (Akst); The Heart of the Sunset (Nicholls); Sleep, Baby, Sleep (Tucker); I'll never ask for more (Ahlert); Take your to-morrow (Razof); Hello, Sunshine (Murray). **12.30 a.m. (Wednesday):** Concertina Solos: Lopeziana (Alter); Irish Medley (arr. Dale); Marilyn (Alter); Scottish Reels (arr. Dale); Hornpipe Medley (arr. Dale); Bonnie Lass o' bon Accord (Skinner); Orange and Blue (arr. Dale); The Road to the Isles. **1.0,** American Songs: Can't we talk it over?; Hallelujah, I'm a bum; Dinah; I don't work for a Living; Fortunes galore; Minnie the Moocher; The Railroad Boomer; Rhapsody in Love. **1.30,** Light Music: Pianoforte solo: Selection from The Big Pond (Fain); Songs: (a) Absent-minded (Summers), (b) Memories of you (Blake); Pianoforte Solo: One Night alone with you (Jeffreys); Songs: (a) Girl of a Million Dreams (Gay), (b) The Kid next Door (Leslie), (c) My Hindu Love (Alter); Pianoforte Solo: The Squirrel Dance (Elliott Smith). **2.0,** Dance Music: Looking on the Bright Side; Marta; Please don't mention it; Shadows on the Window; Just hummin' along; What makes you so adorable?; The King was in the Counting House; Don't tell a Soul; Hummin' to myself; We will always be Sweethearts; Night shall be filled with Music; What would you do?; Moonlight on the River; Let's all dance the Polka; Song of the Lamp; How are you? **2.57,** I.B.C. Goodnight Melody. **3.0** (approx.), Close Down.

FLENSBURG.—See **Hamburg.**

FLORENCE.—See **Turin.**

FRANKFURT

259 metres, 17 kW.; and **CASSEL, 245.9 metres.—4.0 p.m.,** See **Langenburg. 5.15,** Economic Notes. **5.25,** Talk: Count Schlieffen. **5.50,** Talk: Fritz Boehle, a German Painter. **6.15,** Time, Programme Announcements, Weather, and Economic Notes. **6.30,** Recitation. **6.45,** Report on the Second Day of the International Ski-ing Championships in Innsbruck. **7.0 to 9.20,** See **Stuttgart. 9.20,** Time, News, Weather, and Sports Notes. **9.35,** Report on the Six Days' Racing, relayed from the Festhalle. **9.45,** See **Stuttgart. 11.0** (approx.), Close Down.

FREDRIKSSTAD.—See **Oslo.**

FREIBURG.—See **Stuttgart.**

GENEVA.—See **Radio-Suisse Romande.**

GENOA.—See **Turin.**

GLEIWITZ.—See **Breslau.**

GOTEBORG.—See **Stockholm.**

GRAZ.—See **Vienna.**

HAMAR.—See **Oslo.**

HAMBURG

Call ha (in Morse), **372 metres;** 1.5 kW. Relayed by **Bremen, 269.8 metres; Flensburg, 227.4 metres; Hanover, 566 metres;** and **Kiel, 232.2 metres.—6.0 p.m.,** Agricultural Programme—Radio Report from **Oldenburg. 6.25,** Weather Report. **6.30,** Lutz Weltmann reads from his own Works. **7.0,** Hans Sach's Carnival Play—a Humorous Sketch (Albert Petersen). **8.0,** News Bulletin. **8.10,** Concert of Music by Bach and his Sons. The Philharmonic Orchestra, conducted by José Eibenschütz, with Dr. Ernst Latzko (Harpsichord). Concerto in D Minor for Harpsichord and Orchestra (Bach); Three Pieces for Harpsichord (Ph. E. Bach): (a) Prussian Sonata in B flat, (b) Rondo in A, (c) Aria with Variations, Ich schlief, da träumte mir; Symphony in B flat (J. Ch. Bach, arr. Fritz Stein). **9.10,** News Bulletin. **9.20,** Topical Talk. **9.30,** Concert by the Norag Orchestra, conducted by Horst Platen. Dances and Melodies from Don Gil (Braunfels); Pieces from the Biedermeier Suite (Hubay); Intermezzo from Tiefland (d'Albert); Selection from Lohengrin (Wagner); Waltz from Le Pavilion d'Armide (Tcherepnin); Lyric Vision (Mascagni); Piedmontese Dance No. 1 (Sinigaglia); Ballet Music from La Gioconda (Ponchielli). **10.20** (in an interval), Ice Report.

HANOVER.—See **Hamburg.**

HEILSBERG

276.5 metres, 60 kW.; and **DANZIG, 453.2 metres.—12.5 p.m.,** Concert of German Music, on Gramophone Records. In the interval at **12.20,** News. **1.30,** Sponsored Programme, with Gramophone Records. **2.0,** Exchange Rates. **2.30,** Musical Improvisation for Children. **3.0,** Concert by the Little Orag Orchestra, conducted by Eugen Wilcken: Overture, Der Generalkonsul (Reinhardt); Wien, Traum meiner Seele (Geiger); Du mein Schönbrunn, from Die Kaiserin (Fall); Dream Waltz from Der Feldprediger (Millöcker); Selection from The Gipsy Baron (Joh. Strauss); Overture, Franz Schubert (Suppé); Two Pieces from Countess Maritza (Kálmán): (a) Komm Cigány, (b) Gruss mir mein Wien; Selection from Tango um Mitternacht (Komzak); Humorous Review in the interval. **4.30,** Review of Books. **4.50,** Talk by Dr. Riebes Buch. **5.15,** Market Prices. **5.20,** Ice Report. **5.30,** Talk: In a Hairdresser's Saloon. **6.0,** Shorthand Dictation. **6.30,** Dance Music by the Little Orag Orchestra, conducted by Eugen Wilcken, and the Ednur Runde Dance Band. **7.0** (in an interval), Weather and News. **7.45** (from **Agram**), Part Relay of an International Concert from Zagreb. **8.15,** Literary Programme: Problems of the Day in Contemporary Literature.—III.: The Old and the Young Generation. **9.15,** Weather, News, and Sports Notes.

HILVERSUM

Announced **HUIZEN, 296.1 metres;** 20 kW. (7 kW up to **4.40 p.m.**).—Programme of the Catholic Radio Society (K.R.O.). **11.10 a.m.,** Religious Address. **11.40,** Police Notes. **11.55,** Sextet Concert: Kaiser Friedrich Marsch (Friedemann), Pizzicato (Stabel); Waltz from Fra Luna (Lincke); Le soir (Thomas); Rendez vous bei Lehár (Hruby); Siamesiche Watchparade (Lincke). **12.40 p.m.,** Variety Music on Gramophone Records. **12.55,** Concert (contd.): Selection from Der Bettelstudent (Millöcker); Call me Darling (Reisfeld); Back to the Waltz (Freudenthal); That tender Melody (Lindern); Freiheitsjubel (Blankenburg). **1.25 to 1.40,** Interval. **1.40,** Talk. **2.15,** Programme for Women. **3.10,** Dressmaking Lesson. **3.40,** Lesson for Milliners. **4.10,** Chopin Pianoforte Recital: Ballad in F Sharp Minor, Op. 52; Waltz in A flat, Op. 69, No. 1; Scherzo in C Sharp, Op. 39. **4.30,** Light Music on Gramophone Records. **4.50,** Concert (contd.): Moment musical in A flat, Op. 94 (Schubert); Impromptu in E flat, Op. 90 (Schubert); Dansenses de Delphes (Debussy); Le vent dans la plaine (Debussy); Minstrels (Debussy). **5.10,** Gramophone Records of Variety Music. **6.10,** Esperanto Lesson. **6.30,** Gramophone Records (contd.). **6.50,** Talk. **7.10,** Police Notes. **7.25,** Talk. **7.40,** Orchestral Concert, conducted by J. Gerritsen. Soloist: Mlle. Gruys (Songs). Frisch voran (Blankenburg); Selection from Jung Heidelberg (Millöcker); In the Tea House of a Hundred Steps (Yoshitomo); Donausagen (Fucik). **8.10,** Agricultural Talk. **8.40,** News Bulletin. **8.50,** Concert (contd): Songs, Recitative and Aria from Siroe (Handel); Air from Partenope (Händel); Kol Nidrei (Aubert); Air from the First Ballet Suite (Rameau); Songs: (a) Klärchens Lied (Schubert), (b) Auf dem Wasser zu singen (Schubert), (c) Dein blaues Auge (Brahms), (d) Sonntag (Brahms), (e) Wetter (Krenek), (f) Unser Wein (Krenek); Overture, Djamileh (Bizet); Scènes napolitaines (Massenet); Dance (Sinigaglia). **10.10,** Concert by the K.R.O. Boys. **10.55,** Variety Music on Gramophone Records. **11.10,** Concert (contd.).

HORBY.—See **Stockholm.**

HUIZEN

Announced **HILVERSUM, 1,875 metres;** 8.5 kW.—Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.) Transmits at intervals from **11.40 a.m.** Time Signal. **11.41,** Concert by the Station Chamber Orchestra, conducted by Nico Gerharz: Motor March (Rosey); Overture, Pax et Labor (Parès); Andante cantabile (Tchaikovsky); Selection from Don Giovanni (Mozart); Accordion Solo; Prelude to Nakirishochzeit (Lincke); Amour brisé (Gillet); Tout feu toute flamme (Berger); Waltz, Ever or Never (Waldteufel); Donna Vatra (Köpping); Spanish March (Grit); Potpourri (Urbach); Accordion Solos; Selection from The Merry Peasant (Fall); Selection from Frederika (Lehár); March, Stets Zielbewusst (Blankenburg). **1.55 p.m. to 2.10,** Interval. **2.10,** Variety Music on Gramophone Records. **2.40,** Talk. **3.40,** Pianoforte Recital by M. Szompta. **4.10,** Concert by a Children's Choir, conducted by Jacob Hamel. **4.40,** Stories for Children. **5.10,** Talk. **5.40,** Popular Music on Gramophone Records. **6.40,** Concert by the Station Orchestra, conducted by Nico Treep: Overture, Raymond (Thomas); Selection from Der Teufelsreiter (Kálmán); Marching Song from Das moderne Mädel (Jessel). **7.10,** English Lesson. **7.40,** Time Signal. **7.41,** News Bulletin. **7.45,** Concert by the Station Orchestra, conducted by Nico Treep; Soloists, Billy Mayerl (Pianoforte) and Grethe Weijnschent-Hogenbirk (Soprano): Overture, Berliner Luft (Lincke); Waltz, Sehen Sie so tanzt man in Wien (Zeller); Madrid (Speyer); Pianoforte Solos of Jazz Music: Parade March (Roland); Soprano Solos: Arias from: (a) Der Waffenschmied (Lortzing), (b) Das Nachtlager in Granada (Kreutzer); Invitation to the Waltz (Weber); Pianoforte Solos of Jazz Music. **9.10,** Concert of Light Music by Hans Bund and his Orchestra; Soloists, Irene Ambrus and Luigi Bernauer. **10.40,** News Bulletin. **10.45,** Popular Music on Gramophone Records. **11.40** (approx.), Close Down.

INNSBRUCK.—See **Vienna.**

KALUNDBORG.—See **Copenhagen.**

KIEL.—See **Hamburg.**

KLAGENFURT.—See **Vienna.**

KOSICE.—See **Prague.**

LAHTI

1,796 metres; 40 kW.; and **HELSINKI, 368.1 metres.—6.30 p.m.,** Orchestral Concert, conducted by Toivo Haapanen: Soloist: Naum Tevin (Violin); Eine kleine Nachtmusik (Mozart); Rêverie du soir (Saint-Saëns); Danse des Enfants (Honegger); Poème (Chausson); Napoli from the Italian Suite (Charpentier); Intermezzo sinfonico (Mascagni); Overture, William Tell (Rossini). **7.45,** News in Finnish. **8.0,** News in Swedish.

LANGENBERG

473 metres; 60 kW.—**12 Noon,** Concert, conducted by Eysoldt. Waltz, Sphärenklänge (Strauss); Selection from Cavalleria rusticana (Mascagni); Spring Serenade (Lacombe); Symphonic Poem, Turkish Carnival (Luigini); Overture, Die Frau Meisterin (Suppé); Russian Rhapsody from Prince Igor (Borodin); Pizzicati-Scherzettino from Sylvia (Delibes); Pierrots Geständnis (Jessel); Potpourri of Russian Folk Songs and Dances. Wolgaklänge (Lindemann). In the interval at **1.0 p.m.,** News. **1.30,** Sponsored Programme with Gramophone Records. **2.30,** Economic Notes and Time. **2.50,** Programme for Children. **3.20,** Hints on the Broadcasts for Schools. **3.30,** Geographical Talk. **4.0,** Concert by the Dresden String Quartet: String Quartet, Op. 95 in F Minor (Beethoven); String Quartet, Op. 161 in G (Schubert). **5.15,** Italian Lesson. **5.45,** Weather, Time, Economic Notes and Sports Results. **6.0,** Agricultural Talk. **6.20,** Review of New German Books. **6.35,** Talk: World Economics. **6.55,** News. **7.0,** From the Days of our Youth. **8.0,** Concert by the Station Orchestra, conducted by Buschkötter. Soloists: Willi Steeh (Pianoforte) and Alma Moodie (Violin). Pianoforte Concerto in B flat Minor (Tchaikovsky); Violin Concerto in A, Op. 35a (Busoni). **9.10,** News, Sports Notes, and Close Down.

LAUSANNE.—See **Radio-Suisse Romande.**

LEIPZIG

389.6 metres; 120 kW; and **DRESDEN, 319 metres. 12.15 p.m.,** Bavarian Folk Music on Gramophone Records, followed by Exchange. **1.0,** Programme for the Unemployed. **1.15 to 2.0,** Interval. **2.0,** Programme for Young People. **2.35,** Economic Notes. **3.0,** Talk in connection with the Annual Meeting of the Thuringian Equestrian Club. **3.30,** Concert by the Leipzig Symphony Orchestra, conducted by Carl Schuricht. Soloist: Gisela Binz (Pianoforte); Romantic Overture in D, Op. 16 (Thuille); Concerto No. 2 in A for Pianoforte and Orchestra (Liszt); Theme with Variations from the Third Suite, Op. 55 (Tchaikovsky). **4.30,** Weather and Time. **4.50,** Economic Notes. **5.0,** Talk: Trans-Atlantic Air Traffic between Europe and South America. **5.25,** French Lesson. **5.50,** Introductory Talk to the Gewandhaus Concert on February 9th. **6.0,** Looking at Works of Art—Young People talk to an Artist. **6.30,** Concert by the Emdé Orchestra: Overture, Der Göttergatte (Lehar); Minuet in A (Kostal); Uyra-Czardas; Waltz, Rudolfsklänge (Jos. Strauss); March, Mit Mut und Kraft (Blon); Valse douce (Nikisch); Intermezzo, Rosenzeit (Mannfred); Galantes Fest (Dreyer); Ballet Suite (Fresco); Waltz, Frühlingsbotschaft (Fucik); Springtanz (Schytte); Tanzweisen (Brüll); March, Morgen muss ich fort von hier (Lindemann). In the interval at **6.15** (approx.), Report of the Second Day of the International Ski-ing Championship at Innsbruck. **8.0,** Economic Notes. **8.10,** The Whip—Radio Play (A. H. Lehmann). **9.0,** News. **9.30,** Concert of Music by Leipzig Composers. Franz Hammerla (Clarinet), Herbert Heyde (Bassoon), Kurt Stiebler (Violin), Willy Pretzsch (Flute), and Joachim Popelka (Pianoforte). Sonata in E Minor, Op. 16, for Flute and Pianoforte (Kötschau); Heitero Suite for Flute, Clarinet and Bassoon (Ziems); Sonata in E flat for Violin and Pianoforte (Büchner).

LINZ.—See **Vienna.**

LJUBLJANA

574.7 metres; 2.5 kW.—**5.30 p.m.,** German Lesson. **6.0,** Talk on Spalato. **6.30,** Talk: A Voyage to India. **7.0,** Programme relayed from **Zagreb, 307 metres. 9.0,** Time, News, and Light Music.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—**7.30 p.m.,** Radio Gazette for Lyons and the South-East. **8.10,** Carmen—Opera (Bizet), relayed from the Opera House, Marseilles. After the Concert, News Bulletin.

MADRID

ARANJUEZ, EAQ, 30.43 metres; 20 kW.—Programme arranged by the Spanish-American Radio Club and dedicated to Listeners in Porte Rico. **10.30,** Popular Music. **10.45,** Radio Chronicle. **11.0,** Concert of Variety Music. **11.35,** Answers to Correspondence. **11.40,** Light Music. **12 Midnight** (approx.), Close Down.

MADRID

UNION RADIO; Call EAJ7; 424.3 metres; 2 kW.—**7.0 p.m.,** Chimes, Exchange Quotations and Request Gramophone Concert. **7.15,** Medical Talk. **7.30,** Talk by Joaquin España Cantos. **7.45** (approx.), Request Gramophone Concert (contd.). **8.25,** News Bulletin. **8.30 to 9.0,** Interval. **9.0,** Linguaphone English Lesson. **9.30,** Chimes and Time Signal. **9.35** (approx.), Aida—Opera (Verdi). **11.55,** News Bulletin. **12 Midnight,** Chimes and Close Down.

MALMO.—See **Stockholm.**

MILAN.—See **Turin.**

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—**3.10 p.m.,** Concert by the Station Orchestra, conducted by J. Plichta. **4.10,** See **Prague. 4.50,** See **Brno. 5.0,** Talk. **5.15,** See **Brno. 6.0,** See **Prague. 6.45,** Cabaret Programme. **7.40,** See **Prague. 8.10,** See **Brno. 9.0,** See **Prague. 10.0** (approx.), Close Down.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—**4.0 p.m.,** News. **4.10,** Announcements. **4.30,** Concert. **5.30,** Concert of Light Music or a Relay. **8.0,** Talk in French: Preparatory School Education. **8.5,** Time. **9.5,** Press Review.

MOTALA.—See **Stockholm.**

MUHLACKER.—See **Stuttgart.**

MUNICH

533 metres; 60 kW. Relayed by **Augsburg** and **Kaiserslautern, 560 metres;** and **Nürnberg, 239 metres.—4.0 p.m.,** Orchestral Concert, conducted by Erich Kloss: Soloist, Maria Schäfer (Folk Songs); Overture, Il re pastore (Mozart); Three Pieces (Richard Strauss): (a) Selection from Die Frau ohne Schatten, (b) Oriental Burlesque from Le Bourgeois Gentilhomme, (c) Liebessehnsucht; Ballet Music from Little Ida's Flowers (Klenau); Interlude, Folk Songs of the Saar and Alsace; Intermezzo from Graziella (Mattausch); Die wunderbaren Geschichten des Kapellmeisters (Kreisler-Rezniczek); Boston Waltz from Dance Suite (Niemann), Suite, Friedemann Bach (Leuschner); Serbian Melodies (Gal). **5.15** (from **Nürnberg**), Talk on Money. **5.35** (from **Nürnberg**), Talk for Workers. **5.55,** Time, Weather, and Agricultural Notes. **6.5,** Talk: Röntgen's Great Discovery. **6.25,** Introduction to the following Transmission. **6.35,** The Bird Fancier—Operetta in Three Acts (Zeller), relayed from the National Theatre. **9.20,** Time, Weather, News, and Sports Notes.

NAPLES.—See **Rome.**

NOTODDEN.—See **Oslo.**

OSLO

1.083 metres; 60 kW. Relayed by **Fredrikstad, 365.8 metres; Hamar, 574.7 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres;** and **Rjukan, 447.1 metres.—4.0 p.m.,** Orchestral Concert, conducted by Hans Backe, relayed from the Grand Hotel. **5.0,** Talk for Housewives. **5.45,** Saxophone Solos by M. Trygve Gundersen. **6.0,** Announcements, Weather, and News. **6.30,** English Lesson. **7.0,** Time Signal. **7.1,** Concert by the Station Orchestra, conducted by Hugo Kramm: Radetzky March (Joh. Strauss); Overture, The Queen's Kerchief (Joh. Strauss); Selection from Les Géorgiennes (Offenbach), Waltz, Wiener Bürger (Ziehrer); Selection from Das Puppenfee (Bayer); Waltz, Gold and Silver (Lehár); Melody (Kálmán); Selection from Der Tenor der Herzogin (Künnecke); Selection from Oh Kay! (Gershwin). **8.10,** Talk: The Argentine To-day and its Possibilities. **8.40,** Weather and News. **9.0,** Topical Talk. **9.15,** An Interview with M. Oscar Mathiesen—Champion Skater. **9.45** (approx.), Close Down.

OSTERSUND.—See **Stockholm.**

PALERMO

542 metres; 8 kW.—**7.0 p.m.,** Announcements, Tourist Talk, Agricultural Notes, and Giornale Radio. **7.20,** Popular Music on Gramophone Records. **7.30** (in an interval), Time Signal and Announcements. **7.45,** Rigoletto—Opera in Four Acts (Verdi) on Gramophone Records. In the intervals: Talk, Notes on Art, and Announcements. **9.55,** News Bulletin.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW. Time Signal (on **2,650 metres**) at **9.26 a.m.** and **10.26 p.m.** (Preliminary and 6-dot Signals).—**5.45 p.m.,** Le Journal Parlé. **7.20,** Weather Report. **7.30,** Recital of Fantasias by Marie-Antoinette Pradier (Pianoforte), with Commentary by André Delacour. Chromatic Fantasia (Bach); Fantasia (Mozart); Fantasia, Op. 111 (Schumann). **8.0,** Concert by the Firmin Touche Quartet: Quartet in A Minor, Op. 29 (Schubert); Two Serenades for String Quartet (Jongen). **9.0** (approx.), Close Down.

FEB. 7th **TUESDAY** *continued*

PARIS

POSTE PARISIEN; 328.2 metres; 60 kW.—7.0 to 9.0 a.m., Probable Relay of the Test Match from Australia. **6.45 p.m.,** Le Journal Parlé. **7.0,** Sponsored Concert with Gramophone Records. **8.0,** Film Notes. **8.5,** Legal Talk. **8.15,** Interval. **8.30,** Concert of Music by Sylvio Lazzari by the Station Symphony Orchestra, conducted by Théodore Mathieu: Prelude to Armor; Songs, accompanied by the Composer; Ballet Music from Mélénis; Effet de nuit, conducted by the Composer; Ballad, La tour de feu; Symphony in E Flat. **10.30,** News.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. **7.30,** Weather Forecast and Physical Culture (contd.). **7.45,** Gramophone Records: Jeux d'eau (Ravel); Selection from Les Biches (Poulenc). **8.0,** Press Review and Weather. **12 Noon,** Concert by the Krettly Orchestra. Part I: Opera Music: Overture, Martha (Fiotow); Entr'acte, from Mignon (Thomas); Ballet Music from Lakmé (Delibes); Selection from Tosca (Puccini); Suite from Aphrodite (Erlanger); Aubade, from Chérubin (Massenet); Selection from Messaline (de Lara); Second Suite, La Habanera (Laparra). Part II: Modern French Music: Vers l'eglise, dans le Soir (Ladmirault); Du Côté de la Mer (Tournier); Pavane pour une Infante défunte (Ravel); Four Sketches (Gaubert); Cortège des Eléphants sacrés (Delmas); Berceuse (Ropartz); Serenade (Ropartz). In the interval at **1.0 p.m.,** Exchange, News, and Weather, and at **1.30,** Exchange. **2.0,** Exchange and Announcements. **3.45,** Exchange and Market Prices. **4.30,** Elementary English Lesson. **6.10,** Agricultural Talk. **6.30,** Advanced English Lesson. **6.50,** Theatre Notes. **7.5,** Talk on Art. **7.20,** Concert by the Krettly Orchestra: Gondola Song (Mezzacapo); Serenade (Braga); Valse Lumineuse (Ganne); Selection from Il Guarany (Gomez); Czardas No. 3 (Michiels). **7.45,** Review of the British Press, Commercial Prices, and News. **8.0,** Feue la Mère de Madame—Comedy (Feydau). **8.20,** News and Weather. **8.40,** Review by Pierre Seize. **8.55,** Chamber Music Concert: The Radio Paris Quintet. Soloists: Madeleine Peltier (Pianoforte), Serge Tenenbaum (Violin), and Roger Boulmé ('Cello); Trio (Lalo); Pianoforte Solos: (a) Barque sur l'Océan (Ravel), (b) Vent dans la plaine (Debussy), (c) Etude en Forme de Valse (Saint-Saëns); Phalènes (Philipp); 'Cello Solos: (a) Romance in F (Saint-Saëns), (b) Le Baiser d'Emnice (Nougès), (c) Tarantella (Popper); Quintet (Vierne). In the interval at **9.15,** Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW. Relayed by **W8XK** on **48.86 metres** and **25.27 metres.—9.0 p.m.,** Work-a-day Thoughts. **9.5,** Business News. **9.15,** Programme to be announced. **9.30,** Weather Report. **9.31,** Johnny Muskrat. **9.32,** Market Reports. **9.45,** Pianoforte Interlude. **9.50,** David Lawrence Dispatch. **9.55,** KDKA Artist Bulletin. **9.58,** Programme Announcements. **10.0,** Programme to be announced. **10.30,** The Singing Lady, from **New York.** **10.45,** Little Orphan Annie. **11.0,** Mandy and Cousin Bill, from **New York.** **11.15,** Time Signal. **11.16,** Weather Report. **11.17,** Teaberry Sport Review. **11.22,** Press News Recler. **11.27,** Strange Facts. **11.29,** Temperature Report. **11.30,** KDKA Dinner Concert. **11.45 to 12.45 a.m. (Wednesday), New York** Relay. **11.45,** To-day's News, by Lowell Thomas. **12.0** Midnight, Pepsodent Amos 'n' Andy. **12.15 a.m.,** National Advisory Council on Radio in Education—Local Government Needs of 1933. **12.45,** Fireflies. **1.0 to 3.15, New York** Relay. **1.0,** Eno Crime Club. **1.30,** Time Signal and Adventures in Health. **1.45,** Phillips Lord in The Country Doctor. **2.0,** Household Musical Memories. **2.30,** Willard Robinson's Deep River Orchestra. **3.0,** Morin Sisters. **3.15,** Westinghouse Pioneers. **3.30,** Ho May Bailey and Orchestra from **New York.** **3.45,** Bradley Kincaid. **4.0,** Time Signal. **4.1,** Teaberry Sport Review. **4.11,** Temperature Report. **4.12,** Weather Report. **4.13,** KDKA Artist Bulletin. **4.15,** Press Last Minute News Flashes. **4.20,** Henry Halstead and his Californians. **5.0,** Cotton Club Orchestra, from **New York.** **5.30,** Time Signal and Goodnight.

PORSGRUND.—See **Oslo.**

POZNAN

335 metres; 1.9 kW.—5.50 p.m., Miscellaneous Items and Announcements. **6.10,** Book Review. **6.28,** Time. **6.30,** See **Warsaw.** **7.0,** Military Band Concert, conducted by Dzidek. Soloists: Wanda Kedziorówna (Soprano) and Jules Lescji (Whistler). Piece for Orchestra; Whistling Solos: (a) Air from The Tales of Hoffmann (Offenbach), (b) Amore canta (Tagliaferri), (c) Air from Frasquita (Lehár); Piece for Orchestra; Whistling Solos: (a) Waltz, Fruhlingsstimmen (Joh. Strauss), (b) O sole mio (Di Capua); Piece for Orchestra. **8.0,** Song Recital by Wanda Kedziorówna (Soprano). Songs (Schumann): (a) Der Nussbaum, (b) Die Lotosblume, (c) Widmung; Amore-amor (Tirindelli); Waltz, Parla (Arditi). **8.20,** Pianoforte Recital by Olga Karpacka: Variations, Op. 24 (Brahms); Scherzo in C Sharp Minor (Chopin). During the intervals, Theatre Guide and Programme Announcements. **9.0,** See **Warsaw.** **9.15,** Time, Sports Notes and Police Report. **9.30,** Dance Music from the Café Esplanade. **11.0** (approx.), Close Down.

PRAGUE

488.6 metres; 120 kW.—3.10 p.m., See **Moravská-Ostrava.** **4.10,** Talk on Economics. **4.20,** Czech Lesson for Germans, followed by German Lesson for Czechs. **4.50,** Light Music on Gramophone Records. **5.5,** Market Prices. **5.15,** Topical Talk for Workers. **5.25,** News in German. **5.30,** German Transmission: Talk on Social Questions and Reading of Ballads by Works of Goethe, Schiller, and Hebbel. **6.0,** News. **6.5, Talk:** The Modern Woman. **6.20,** Concert by the Mandr Bagpipe Trio. **6.45,** See **Moravská-Ostrava.** **7.40,** Viola Recital by Kitty Cervenkova: Sonata for Violin and Pianoforte, Op. 3 (Vomacka); Sonatina No. 3 in G Minor, Op. 137 (Schubert). In the interval at **8.0,** Time Signal **8.10,** See **Brno.** **9.0,** Time, News, Press Review, and Sports Notes. **9.15,** Concert of Modern Music by the Prague Wind Instrument Quintet; Introductory Talk; Quintet, Op. 10 (Pavel Haas); Serenade, Op. 5 (Eugene Suchon). **10.0** (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres 25 kW.; LAUSANNE, 680 metres; and GENEVA, 760 metres.—5.0 p.m. (from **Lausanne**), Talk: Blind People in the World of To-day. **5.30** (from **Geneva**), English Lesson. **6.0** (from **Lausanne**), Weather and News. **6.20** (from **Geneva**), Answers to Correspondence. **6.30** (from **Geneva**), Newly-released Gramophone Records. **7.0** (from **Geneva**) Chamber Music by the Geneva Quartet; Quartet in G (Beethoven); Pianoforte Quintet, Op. 34 (Brahms). **8.0** (from **Lausanne**), Cabaret Concert. **9.0,** News and Weather. **9.10** (from **Geneva**), Report on the Work of the League of Nations. **9.25** (approx.), Close Down.

RIGA

525 metres; 15 kW.—6.0 p.m., Weather Report. **6.5,** Orchestral Concert. **7.0,** News. **7.20,** Schubert Song Recital by Emils Maurins (Baritone). **7.40,** Concert of Popular Music: Humoresque (Dvorák); A Fête in Aranjuez (Demersemann); Salut d'amour (Elgar); Melody from Agnès, dame galante (Février). **8.0,** Weather and News. **8.30,** Dance Music. **9.0** (approx.), Close Down.

RJUKAN.—See **Oslo.**

ROME

Call 1RO; 441 metres; 50 kW. Relayed by **Naples, 319 metres;** and **2RO, 25.4 metres.—7.0 a.m.,** Gymnastics. **7.15 to 7.30,** Giornale Radio and Announcements. **11.30,** Weather and Light Music on Gramophone Records. **12 Noon,** Time and Announcements. **12.2, to 1.15 p.m.,** Orchestral Concert. In the interval from **12.30 to 12.45,** Giornale Radio and Exchange. **3.45,** Children's Radio Review. **4.10,** Announcements. **4.15,** Exchange and Giornale Radio. **4.30 to 5.15,** See **Turin.** **6.0,** Giornale Radio. **6.10 (Naples),** Shipping and Sports Notes. **6.15,** Atmospheric Signals, Agricultural Notes and Announcements. **7.0,** Time and Announcements. **7.2,** Talk: The Moon. **7.15,** Light Music on Gramophone Records. **7.30,** Sports Notes and Tourist Report. **7.45,** Variety Concert: Adagio and Finale from the String Quartet in G (Perosi); Rapsodie nègre (Poulenc); Three Songs for Soprano, Strings and Harpsichord: (a) Solitario bosco ombroso (Bettino Ciampi), (b) Supplica d'amore (Riamondo del Fiocco), (c) Invettiva contro una donna (Anon, 1763); Three Songs in Popular Italian Style for Soprano and Small Orchestra (Gian Luca Tocchi): (a) Ninna nanna, (b) Teresa bella, (c) Vendemmia; Rhapsody, España (Chabrier). **8.30,** Rosalind—Play in One Act (J. M. Barrie). **9.0** (approx.), Concert (contd.): Third Act of L'Amico Fritz (Mascagni); Gipsy Dance from The Fair Maid of Perth (Bizet). **9.55,** News Bulletin.

SALZBURG.—See **Vienna.**

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY); 379.5 metres; 50 kW. Relayed at intervals by **W2XAF** on **31.48 metres** and by **W2XAD** on **19.56 metres.—12 Midnight,** General Electric Programme. **12.15 a.m. (Wednesday),** Stock Reports. **12.30** till Close Down, **New York Relay. 12.45,** The Goldbergs. **1.0,** Blackstone Plantation. **1.30,** Wayne King's Orchestra. **2.0,** Ben Bernie's Blue Ribbon Orchestra. **2.30,** Ed Wynn and the Fire Chief Band. **3.0,** Lucky Strike Hour and Programme Resumé.

SCHWEIZERISCHER LANDESSENDER

BEROMUNSTER, 459 metres; 60 kW.; BASLE, 244.1 metres; and **BERNE, 245.9 metres.—11.28 a.m.,** Time Signal from Neuchâtel Observatory. **11.30,** Weather and News. **11.40,** Concert of Operetta Music by the Radio Orchestra. **12.35 p.m.,** Weather and Exchange. **12.45 to 2.30,** Interval. **2.30,** Concert by the Little Radio Orchestra. **3.0,** Light Music on Gramophone Records. **4.0,** Chamber Music on Gramophone Records. **4.30,** Weather. **4.35 to 5.30,** Interval. **5.30** (from **Berne**), Talk: The Historic Flags of the Swiss Confederation. **6.0,** Time and Weather. **6.1** (from **Berne**), Notes on the Broadcasts for Schools. **6.15** (from **Berne**), Talk: Gold as a Basis of Currency. **6.45** (from **Berne**), A Scene from Der Napolitaner—Comedy (Otto von Greyerz), with Music by the Radio Orchestra. **7.15** (from **Berne**), Concert of Folk Songs by the Freiheit Male Voice Choir, conducted by Ernst Tanner and the Workers' Children's Choir, conducted by Fritz Hug, accompanied by the Radio Orchestra. **8.30,** Weather and News. **8.40** from **Berne**), Concert of Country Dances by the Bure vom Biedersee Ländler Orchestra. **9.15** (approx.), Close Down.

SOTTENS.—See **Radio-Suisse Romande.**

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by **Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,348 metres; Ostersund, 770 metres;** and **Sundsvall, 542 metres.—4.5 p.m.,** Choral Concert by Schoolboys. Conductor: Nils Malmberg. **4.30,** Reading. **4.50,** Variety Music on Gramophone Records. **5.45,** Elementary French Lesson, relayed from **Malmö, 231 metres. 6.15,** Weather and News. **6.30,** Talk. **7.0,** Military Band Concert, relayed from **Orebro, 237.2 metres.** Conductor: Nils Höglund. **8.0,** A Play. **8.45,** Weather and News. **9.0,** Orchestral Concert of Light Music. Soloist: Anna Lundström (Songs). **10.0** (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30 a.m., Russian Music on Gramophone Records. **12.45 p.m.,** News Bulletin. **1.0,** Time and Exchange. **1.5,** Light Music on Gramophone Records. **2.0 to 4.45,** Interval. **4.45,** Talk on French Colonies: Nigeria. **5.0,** Orchestral Concert, conducted by Roskam: Marche Ouriflante (Pupy); Waltz, Wedding of the Winds (Hall); Overture, L'Ambassadrice (Auber); Selection from Le Postillon de Longjumeau (Adam); Italian Ballet Airs (Bozi); Aubade Printanière (Lacombe); Slav Rhapsody (Volpatti); Lontanetta (Razigade); March from El Capitan (Sousa). **6.0,** French Lesson. **6.15,** Topical Talk. **6.30,** Concert by the Station Orchestra, conducted by M. de Villars: Overture, Le Roi l'a dit (Delibes); Cantabile (Sporck); Selection from Manon (Massenet); Ein Tanzspiel (Schteker); Suite from Sleeping Beauty (Tchaikovsky); Hungarian Dances (Brahms). **7.30,** Time and News. **7.45,** Popular Music on Gramophone Records. **8.25,** Lottery Results. **8.30,** Carmen—Opera (Bizet), relayed from the Opera House, Marseilles. After the Opera, Relay of the Pastrycooks' Ball from the Palais des Fêtes. **10.30** (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and **FREIBURG, 570 metres.—12.30 p.m.,** Concert from **Langenberg. 1.0,** Sponsored Concert. **1.30,** Advanced English Lesson. **2.0 to 3.0,** Interval. **3.0,** Talk on Flowers. **3.30,** Talk for Women. **4.0,** See **Langenberg. 5.15,** Time, Weather, and Agricultural Notes. **5.25,** Lesson in Ski-ing. **5.50,** Talk: Disaffection in Brazil. **6.15,** Time and News, followed by Popular Music on Gramophone Records. **6.45,** Report on the Second Day of the International Ski-ing Championships in Innsbruck. **7.0,** A Sunny Land—Pictures of Sicily (Anton Brischa). **7.45,** Concert by the Philharmonic Orchestra, conducted by Emil Kahn: Soloist: Hermann Zanke (Flute); Overture, The Secret Marriage (Cimarosa); Symphony in G (Frederick the Great); Concerto for Flute and Orchestra (Mozart); Military Symphony (Haydn). **9.0,** Time, News, Weather, Snow Report, and Programme Announcements. **9.35,** See **Frankfurt. 9.45,** Dance Music by the Dance Band of the Philharmonic Orchestra. **11.0** (approx.), Close Down.

SUNDSVALL.—See **Stockholm.**

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—5.45 p.m., Operetta Music: Song from Robert the Pirate (Romberg); Two Melodies from Frederica (Lehar); Melody from The Gipsy Princess (Kalman). **6.0,** News. **6.15,** Selection from Hansel and Gretel—Fairy Opera (Humperdinck). **6.30,** Chansonnettes. **6.45,** 'Cello Solos; Interlude (Chausson); Simple aveu (Thomé); La fileuse (Popper); El pano moruno (Falla). **7.0,** Music by an Argentine Orchestra. **7.15,** News, Market Prices and Racing Results. **7.25,** Local News. **7.30,** Instrumental Music: Minuet from the Quartet in D Minor (Mozart); Evensong (Martin); Vienna, City of my Dreams (Sieczinsky). **7.45,** Opera Music: Airs from: (a) Philémon et Baucis (Gounod), (b) La Favorita (Donizetti), (c) La Juive (Halévy). **8.0,** Accordion Music. **8.15,** Music by a Viennese Orchestra. **8.30,** Extracts from Louise—Opera (Charpentier). **9.0,** Orchestral Concert. **9.30,** Operetta Music: Selection from: (a) Eva (Lehar), (b) Le Petit Duc (Lecocq), (c) Countess Maritza (Kalman). **9.45,** Extracts from Sound Films. **10.0,** Instrumental Solos: Hungarian Pastoral Fantasia (Doppler); Andalusian Romance (Sarasate); Minuet (Valensin). **10.15,** North-African News. **10.30,** Concert for Listeners in Morocco: Selection from The Huguenots (Meyerbeer); Quintet from Carmen (Bizet); Overture, Zampa (Herold); La bigunne, from the Sound Film Il est charmant (Moretti). **11.0,** Military Music. **11.15,** Bal Musette. **11.30,** Programme in English by the I.B.C.: Organ Recital of Popular Melodies; Song of the Dawn (Yellen); Close your Eyes (Carter); An Organ Potpourri; Just one more Chance (Coslow); Home (Clarkson); Musical Variety; The Twilight Waltz (Dubin); I bring a Love Song (Romberg). **12 Midnight,** Weather and Announcements. **12.5 a.m. (Wednesday),** Music by a Viennese Orchestra. **12.30** (approx.), Close Down.

TRIESTE

247.7 metres; 10 kW.—4.30 till Close Down, See **Turin.**

TRONDHEIM.—See **Oslo.**

TURIN

273.7 metres; 7 kW. Relayed by **Milan, 331.5 metres; Genoa, 312.8 metres;** and **Florence, 500.8 metres.—4.30 p.m.,** Orchestral Concert, conducted by Ugo Tansini: Overture, Alessandro Stradella (Flotow); Selection from Anna Karenina (Robbiani); Intermezzo serenata (Repolli); Waltz, Morgenblätter (Joh. Strauss). **5.35,** Giornale Radio, Agricultural Report and Dopolavoro Notes. **6.0,** Giornale Radio. **6.15,** Popular Music on Gramophone Records. **6.25,** Report of the Royal Geographical Society. **6.30,** Time, Announcements and Light Music on Gramophone Records. **7.0,** Giornale Radio, Weather, Variety Music on Gramophone Records and Announcements. **7.30,** An Operetta in Three Acts. In the intervals, Talk and Notes on Art. After the Operetta, Giornale Radio.

VATICAN CITY

19.84 metres (Morning) and **50.26 metres** (Evening); **10 kW.—10.0 to 10.15 a.m.,** Religious Information in Spanish. **7.0 to 7.15 p.m.,** Religious Information in Italian.

VIENNA

517 metres 15 kW. Relayed by **Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 265.9 metres;** and **Salzburg, 218.5 metres.—4.0 p.m.,** Concert by the Josef-Aichorn Orchestra: Potpourri, Von Wien durch die Welt (Hruby); Ach, Herr Schmidt (Carlo); Potpourri, Suppé-Illusionen (Michaelo); Waltz, Seid umschlungen, Millionen (Joh. Strauss); Foxtrot Fantasia, Nach Wien (Robrecht); Intermezzo, Die Biene (Mayer-Aichorn); Matrosentanz (Klein). **5.15,** Agricultural Talk. **5.40,** A Discussion between Dr. Max Eisler and Art Students. **6.10,** French Lesson. **6.35,** Time, Weather and Programme Announcements. **6.45,** Report on the International Ski-ing Championships at Innsbruck. **7.0,** Selection from Des Knaben Wunderhorn, by Dora Mikloslih, Richard Eybner, Josef Hueber, Arthur Preiss and Ludwig Unger. Conductor: Werner Riemerschmid. **7.40,** Talk: The Austrian Federal Theatre. **7.55,** Concert of Music by Richard Heuberger, by the Josef Ludwig Payr Orchestra. Soloist: Maria Gerhart (Soprano). **9.15,** News, Weather and Announcements. **9.30,** Dance Music by the Juan Llossas Orchestra, relayed from Hübners Kursalon.

WARSAW

1,411 metres; 120 kW.—4.0 p.m., Symphony Concert by the Philharmonic Orchestra, conducted by Paul Scheinpflug. Overture to a Shakespearian Comedy (Scheinpflug); Passacaglia and Fugue (Stewn); Suite from Le Bourgeois Gentilhomme (R. Strauss). News in the interval. **4.55,** Programme Announcements. **5.0,** Light Music from the Café Gastronomja. In the interval, News. **6.0,** Miscellaneous Items. **6.20,** Agricultural Correspondence Lesson. **6.30,** Talk: Polish Composers. **6.45,** Radio Journal. **7.0,** Concert by the Radio Orchestra, conducted by J. Oziminski. Soloist: M. Bojar-Przemiecka (Soprano); March (Nowowiejski); Entr'acte from Livia Quintilla (Noskowski); Minuet and Traveller's Song (Paderewsky); Waltz in G Flat (Chopin); Mazurka in B, Op. 33 (Chopin); Soprano Solos: Overture, Tannhäuser (Wagner); Elsa's Dream from Lohengrin (Wagner); Soprano Aria from Tannhäuser (Wagner); March from Tannhäuser (Wagner). **8.10,** Sports Notes. **8.15,** Radio Journal. **8.20,** Violin Recital by Zathureczky; L'Urstein at the Pianoforte; Sonata in D Minor (Geminiani); Adagio in E (Mozart); Le petit moulin à vent (Couperin-Press); Scherzo (Dittersdorf-Kreisler); Hungarian Rhapsody (Bizet-Hubay); Scherzo-Tarantella (Wieniawski). **9.0,** Literary Programme. **9.15,** Dance Music from the Café Italia. **9.55,** Aviation Weather Report and Police Notes. **10.0,** Dance Music from the Bodega. **11.0** (approx.), Close Down.

ZURICH.—See **Schweizerischer Landessender.**

Foreign Programmes continued on page XIII.

For the D.C. Gramophone Amplifier the WIRELESS WORLD chooses MARCONI VALVES

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III.—D.C.2 AMPLIFIER.—FOR D.C. MAINS OPERATION. A three-stage Amplifier, designed for entire operation from D.C. mains valves, and has a push-pull output stage giving a maximum undistorted output of 2,500 milliwatts. Consumption 0.125 unit per hour.

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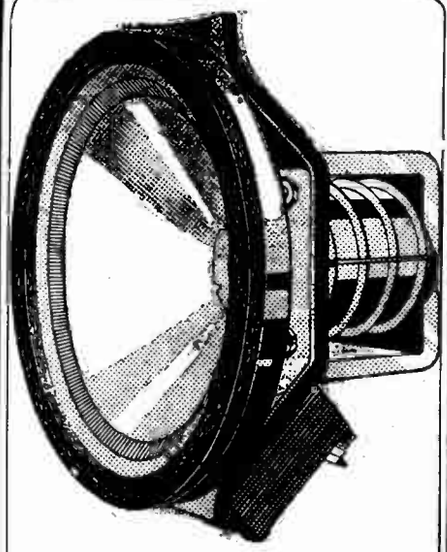

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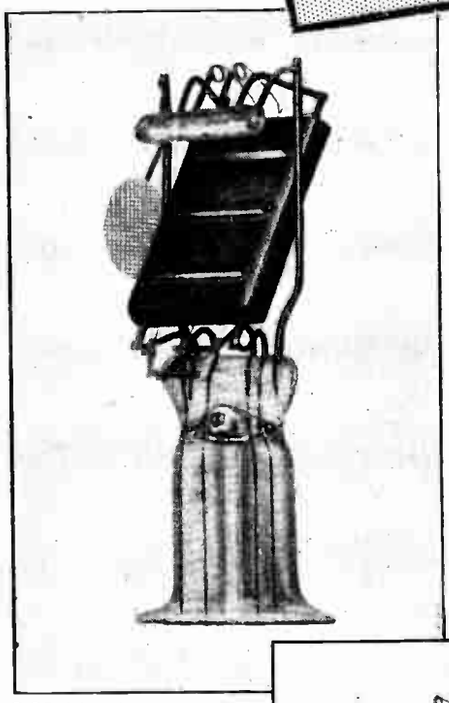

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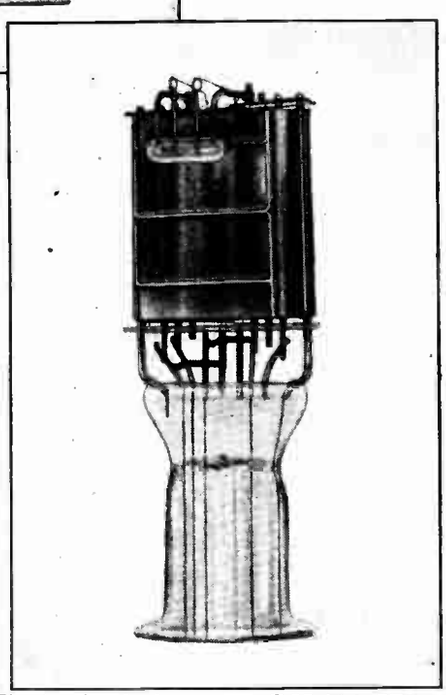

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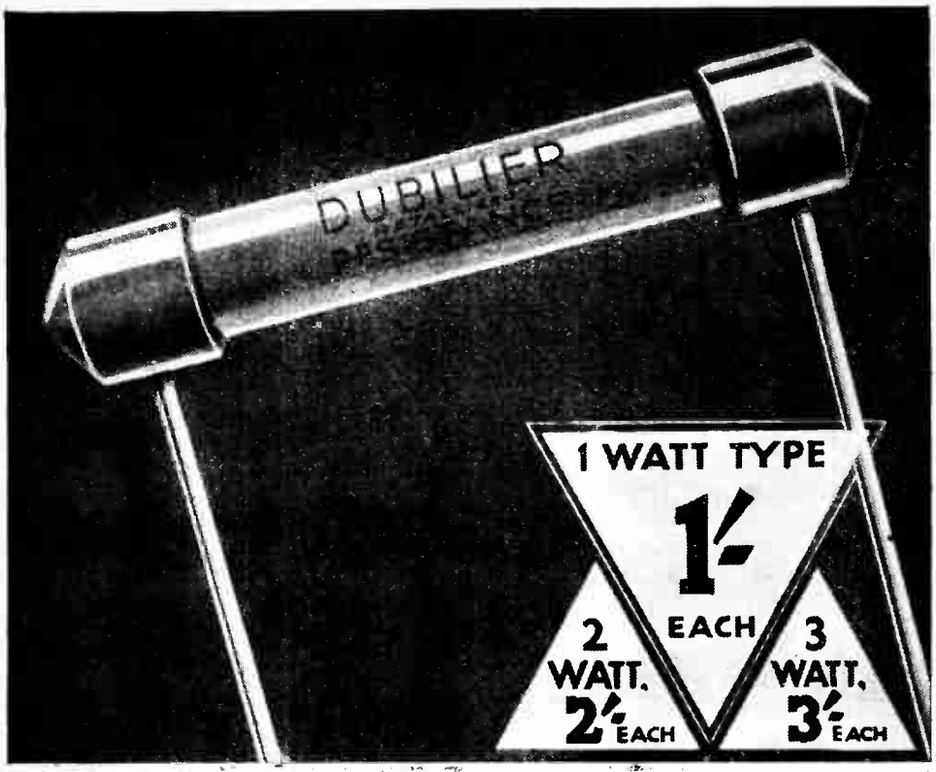

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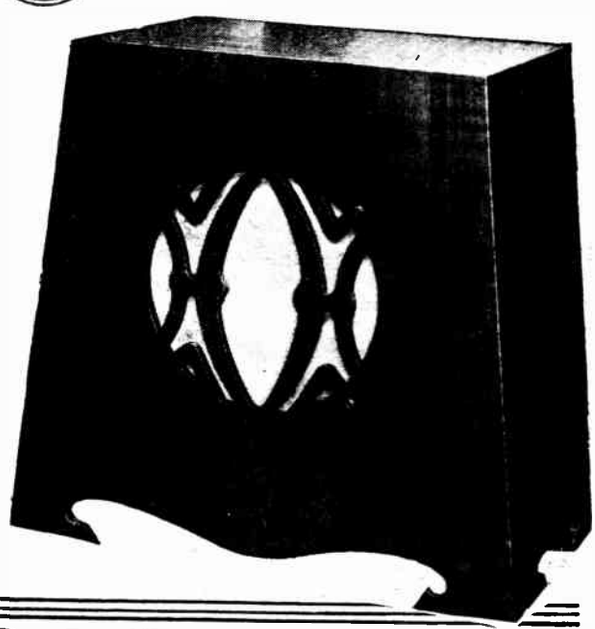

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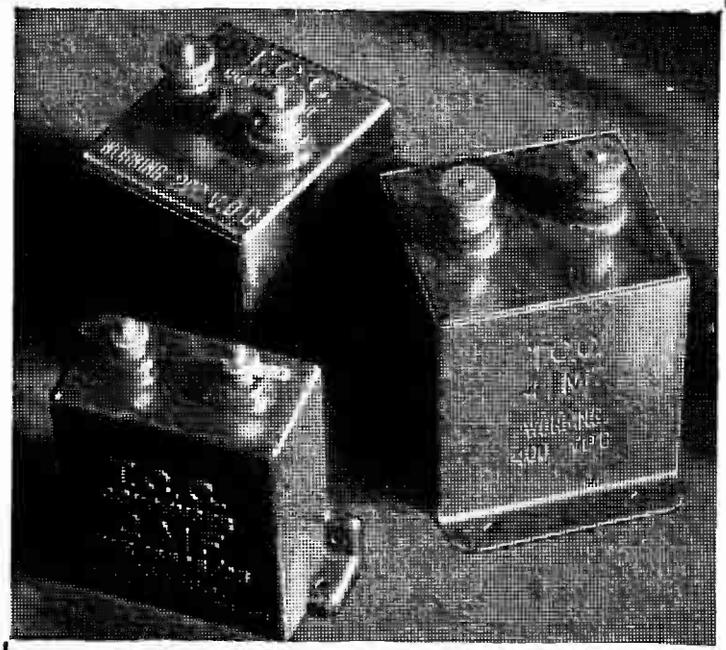

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EDISWAN

Manufacturers and Purveyors of Electric Lamps By Appointment

The name that means 'EXCELLENCE'

"QUIESCENT PUSH-PULL"

—the new principle developed in the Mazda valve laboratories and used for the following "Wireless World" receivers—

"QUIESCENT PUSH-PULL" and "Q.P.P. BATTERY GRAMOPHONE AMPLIFIER"

The problem of economically providing a battery operated set with sufficient power to operate a moving coil speaker efficiently has hitherto proved a serious difficulty. The new principle of Quiescent Push-Pull, developed in the Mazda Valve Laboratories, has solved this problem as, by the use of two Mazda Pen 220A's, a power output of as much as 1.3 watts can be obtained with a total H.T. consumption of only 6 m/A at 120 volts.

The new principle is used to great advantage in this new "Wireless World" circuit, which has been designed to work with Mazda valves.

For full report on Quiescent Push-Pull see article by E. YEOMAN ROBINSON, CHIEF ENGINEER, THE MAZDA VALVE LABORATORIES, in "Wireless World" for January 6th, 1933.

TWO "WIRELESS WORLD" SPECIFICATIONS:

QUIESCENT PUSH-PULL 2	Q.P.P. BATTERY GRAMOPHONE AMPLIFIER
2—MAZDA PEN 220A 17/6 each	2—MAZDA PEN 220A 17/6 each
1—MAZDA H.L.2 7/-	1—MAZDA H.L.210 7/-

MAZDA THE BRITISH VALVES

THE EDISON SWAN ELECTRIC CO. LTD. AEI 155 CHARING CROSS RD., LONDON, W.C.2

Mazda Radio Valves are manufactured in Great Britain for The British Thomson-Houston Co. Ltd., London and Rugby

GOOD RADIO DEALERS RECOMMEND EDISWAN

V.187

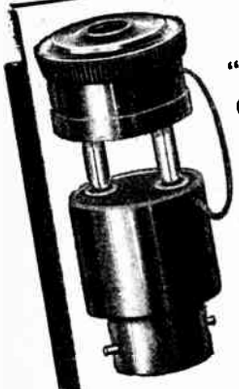
"GOLTONE" MAINS FITTINGS FOR YOUR RADIO-GRAM AND RECEIVER

WE list herewith a few components from our Wide Range of Moulded Accessories. Outstanding features are, Robust Design, Attractive Finish and accurately machined metal parts. A complete range of Radio Wires and Components are listed in our large 1933 Radio Catalogue.

FREE

1933 48 PAGE FULLY ILLUSTRATED RADIO CATALOGUE NOW ISSUED.

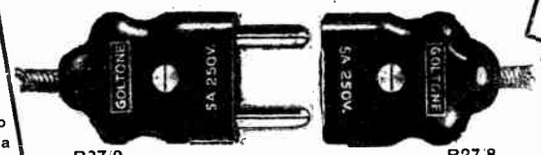
"GOLTONE" Components are obtainable from all First-Class Radio and Electrical Stores.
Refuse Substitutes—if any difficulty write direct.



"GOLTONE" COMBINATION ADAPTOR

Enables current to be tapped from a Lampholder or Wall-Plug. Shock-proof and Moulded Brown or Walnut finish.

R80/90 **1/- each**

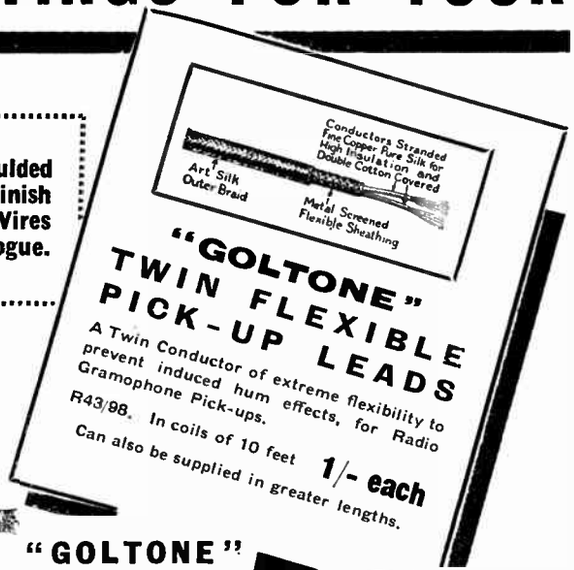


R27/9 R27/8

"GOLTONE" 2-PIN EXTENSION ADAPTOR

For external Loud-Speaker extensions. Standard B.E.S.A. Plug which can engage with normal Wall Sockets. Adaptor with Cord-Grip easily wired.

R27/8 2-Pin Socket **6d. each** R27/9 2-Pin Plug **7d. each**


Conductors Stranded Fine Copper Pure Silk for High Insulation and Double Cotton Covered
Art Silk Outer Braid
Metal Screened Flexible Sheathing

"GOLTONE" TWIN FLEXIBLE PICK-UP LEADS

A Twin Conductor of extreme flexibility to prevent induced hum effects, for Radio Gramophone Pick-ups.

R43/98. In coils of 10 feet **1/- each**

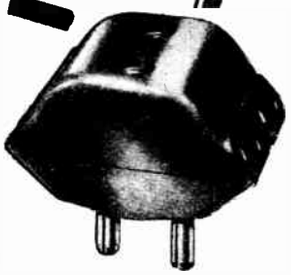
Can also be supplied in greater lengths.

"GOLTONE" 3-WAY WALL-PLUG ADAPTOR

Makes your Wall-Plug serve the purpose of three. Fits standard 5-amp. Wall-Plug, and enables three Tappings to be taken from one plug base.

Attractive finish.

R27/180 - **1/- each**



Ward & Goldstone PENDLETON MANCHESTER LTD.

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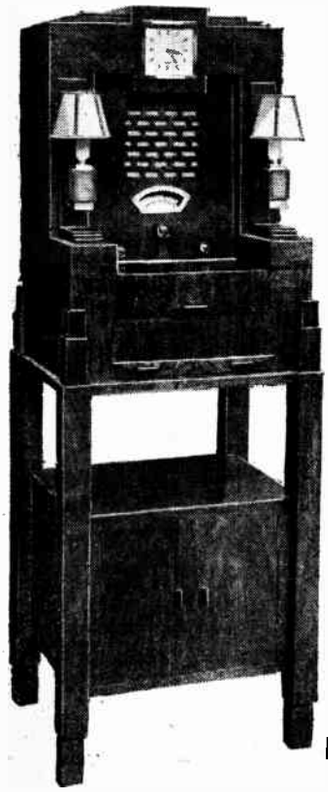

on both radio and gramophone. This piece of radio furniture makes a handsome addition to the furnishing of the home. For the first time the radio set becomes a definite part of a furnishing scheme and not an encumbrance which must be placed in as inconspicuous a position as possible. The speaker is at the correct height and scientifically baffled, giving a pleasing tone. The controls are conveniently arranged and come readily to hand, the dial being illuminated and marked in stations. The changing of records is facilitated by the light of the electric lamps. All electrical circuits are connected to one mains lead, each circuit being independently controlled by its own switch. The electric clock is of the synchronous type and runs indefinitely without attention. Automatic start and stop regulation to gramophone and ample record storage is provided. The cabinet work is of the piano standard both as regards construction and finish, of which a choice of mahogany, walnut or oak is offered. The receiving set employs six valves including rectifier. Two variable mu valves are employed in the high frequency stage. Stations may be changed with absolute absence of howling or shrieking. The selectivity is beyond reproach.

Price exclusive of light fittings - **49 GNS.**

Price including light fittings - - **52 GNS.**

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Showrooms :

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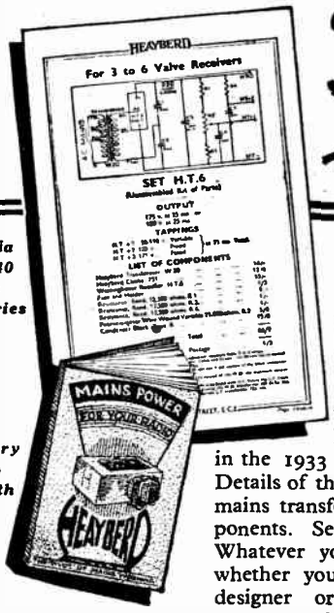

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Seventeen different circuits for the construction of Mains Units, Battery Chargers, etc., are given in the 1933 Handbook on "Mains Power." Details of the many Heayberd mains units, mains transformers, chokes and kits of components. Service Hints and Technical Tips. Whatever your need in mains apparatus, whether you are an experimenter, a set designer or an ordinary listener — this book will prove invaluable. Send for it to-day!

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I enclose 3d. stamps for 36-page Handbook "Mains Power for Radio." Written and produced by Specialists.

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One minute from Moorgate Und. Station.

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Acclaimed by the Trade and Public -the finest value ever offered!

The R. & A. CHALLENGER costs no more than many moving iron instruments, yet it is a Moving Coil Reproducer of the finest materials and workmanship, capable of a remarkable degree of fidelity in the reproduction of speech and music.

It renders the highest notes with crispness and clarity; the deep bass with superb richness and freedom from 'boom,' and the balance throughout the whole range is such that the reproduction completely satisfies the trained musical ear.

The CHALLENGER is beyond question the finest value ever offered. Its sensitivity, to quote "The Wireless World" Test report, is "*better than the average.*" The reproduction of bass below 100 cycles is "*quite definitely above the average*" and "*the balance in music is exceptionally good.*"

Ask your dealer to demonstrate, and you will agree with the verdict of Technical Experts, Trade and Public.

344.

The R&A "CHALLENGER" PERMANENT MAGNET MOVING COIL REPRODUCER

REPRODUCERS & AMPLIFIERS LIMITED, WOLVERHAMPTON.

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1805 A.D.

"England expects every man *this* day . . . !"

1933

You can expect

The LION H·T·BATTERY

to do its duty *every* day

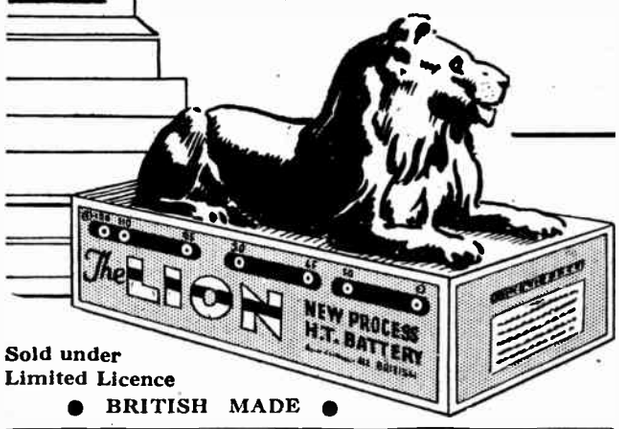
. . . . . and besides giving you efficient service, and giving your Set greater and more lasting power, the Lion H.T. Battery COSTS LESS! It is made in one of the largest factories in Gt. Britain devoted exclusively to battery manufacture. It is made by men who know what you want, and who know how to produce it at the price you want to pay. It is the Battery with the lowest internal resistance.

● *LOOK AT THE PRICES!*

60v. H.T. 4/6 100v. H.T. 7/-

120v. H.T. 9/- 9v. G.B. 10d.

4½v. Pocket Lamp Battery 4½d.



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● BRITISH MADE ●

YOUR DEALER CAN SUPPLY

Advt. of VINCES DRY BATTERIES Ltd. Lion Works, Garford Street, London, E.14. 'Phone: EAST 1902.

REALISM from RECORDS . . . is not a catch phrase designed to persuade the public to buy a component of doubtful value, but adequately describes the effect produced by fitting the 'NOVOTONE' Compensator to a Gramophone amplifier. These extracts from user's letters fully bear out this statement.

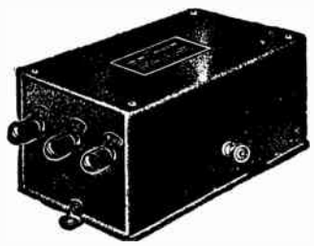
"Although I had heard that it was really an amazing instrument, I did not expect quite such a transformation. I have demonstrated it before many local enthusiasts and all have marvelled at the effect."

"Upon fitting the 'Novotone' the results were most surprising. Moving Coil Speakers that we thought were the last word in purity on Radio Gramophone work, were improved beyond measure."

"The 'Novotone' is a wonderful instrument and does all you claim for it. In fact, on hearing a record with it and then without it, is just like listening to the original orchestra and then to a gramophone record of the same piece of music."

"I am more than delighted with it. It has brought notes out from my records that I had no idea were there."

Write now for a free descriptive booklet, **"Realism from Records,"** which fully explains the application to your Radio Gramophone of this remarkable instrument.



THE 'NOVOTONE' COMPENSATOR

GAMBRELL BROS. LTD., MERTON ROAD, SOUTHFIELDS, S.W.18.
Telephone: Putney 3611.

COMBINED PICK-UP AND TONE-ARM 22/6

NEW TYPE Q.M.B. SWITCH
(Type 485).

These new switches are now fitted with terminals. They are strongly made, with an easy action and ensure perfect contact. 3 amps., 250 volts.

Price 1/3 each.

Embodying many refinements which are the outcome of careful research, the British Radiophone Combined Pick-up and Tone-Arm reproduces voice and music with utmost fidelity.

This component is cased in moulded bakelite, finished in black or brown, and objectionable resonances are eliminated owing to its robust construction and careful design.

The output shows an ample degree of sensitivity, is crisp, free from coloration and needle scratch. Perhaps the most important feature is the head, which, being fixed, eliminates lost motion and rattle. Because the head is fixed at the correct angle, record wear is mimimised, and light damping and good tracking are ensured. Full fitting instructions included.

A "rest" for the British Radiophone Pick-Up can be supplied. Price 1/6 each.

Finished in Brown or Black.

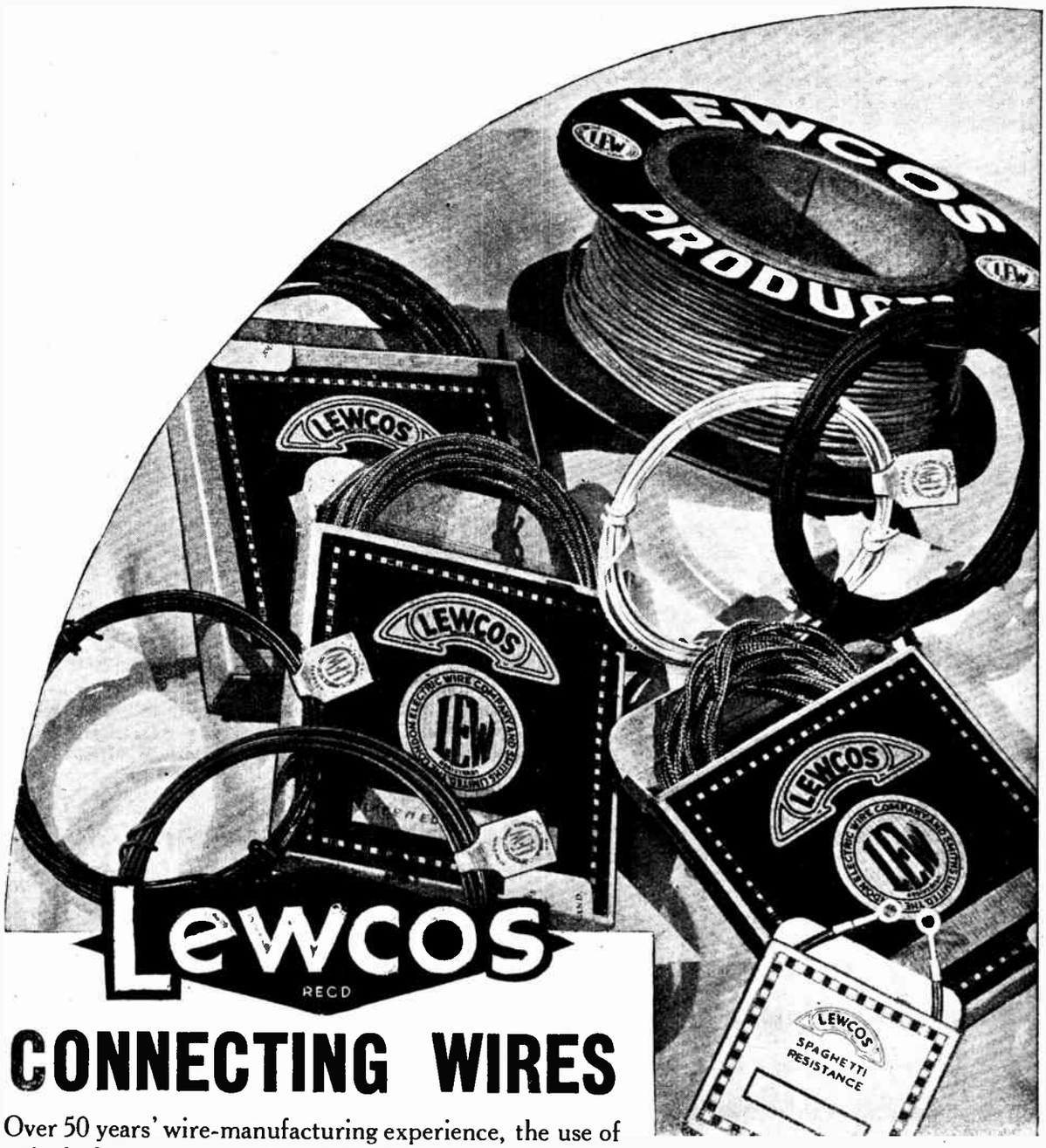
THE BRITISH RADIOPHONE, LTD.

ALDWYCH HOUSE, ALDWYCH, W.C.2.

Telephone: Holborn 6744.

RADIOPHONE

ALL THE BEST SETS ARE CONSTRUCTED WITH



Lewcos
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CONNECTING WIRES

Over 50 years' wire-manufacturing experience, the use of only the best raw materials and the skill of specially trained craftsmen are the factors that combine to make Lewcos Connecting Wires the finest materials for receiver-construction.

A list of prices of these fine examples of wire production is printed on the right. They are stocked by all reputable dealers.

INSIST ON "LEWCOS"

Glazite Connecting Wire (6 colours) **6d.** per 10′ coil.
Screened Connecting Wire, Single **10d.** per 10′ coil
Flat Twin **1/8** „ „ „
Hollow Stranded Copper Braid, **9d. & 1/-** „ „ „
Lewcoflex (Coloured Rubber connecting Flexible) 100 yard lengths or drums, **8/6** to **33/-**
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Spaghetti Resistances, values 300 ohms to 100,000 ohms, **9d** to **1/6**

THE LONDON ELECTRIC WIRE COMPANY AND SMITHS, LIMITED, CHURCH ROAD, LEYTON, LONDON, E.10

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The Greatest Compliment you can pay your Set

YOUR set has probably had quite a deal of money spent on it if you consider its initial cost plus the time and money you've spent on improvement.

Isn't it rather a shame to cramp its style with a poor speaker? A good set *deserves* a good speaker—and there is nothing, absolutely nothing, to equal Blue Spot 99 P.M. This moving-coil speaker is really amazing. It reproduces every note in the musical scale from the lowest bass to the highest treble with a clarity and purity that is the exact counterpart of the original. You will never regret purchasing Blue Spot 99 P.M. Any dealer will be glad to demonstrate it. Write for Catalogue No. W.W. 68.S.

99 P.M. chassis 59/6. Cabinet speaker in walnut (32 P.M.) 87/6. Also Blue Spot De Luxe Permanent Magnet Speaker 75 P.M. Price 75/-.

GIVE IT A BLUE SPOT 99 PM

BLUE SPOT 66R

This remarkable unit goes on enjoying undiminished popularity. There is none to equal it for volume without distortion. It handles any output with ease, and moreover reproduces everything with a silky smoothness that is a treat to listen to. You should hear it at your dealer's.
66R unit 35/-. Oak cabinet speakers, 45R 52/6 and 44R 52/6.

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Blue Spot House, 94/96 Rosoman St., Rosebery Ave., London, E.C.1.
Telephone: Clerkenwell 3570. *Telegrams: "Bluospot, Isling, London."*
Distributors for Northern England, Scotland and Wales: H. C. RAWSON (Sheffield and London), Ltd., 100, London Road, Sheffield; 22, St. Mary's Parsonage, Manchester; 44-46, High Bridge, Newcastle; 37, 38, 39, Clyde Place, Glasgow.

The M·R·G Console 3
RADIO-GRAMOPHONE

FEATURES:

General.—*A three-valve self-contained radio-gramophone with built-in moving-coil loud speaker of the energised type. For operation on A.C. mains with an external aerial.*

Circuit.—*One H.F. stage with single-tuned input and intervalve circuits. Capacity-controlled reaction and H.F. volume control by grid bias adjustment. Power grid detector, coupled by parallel-fed transformer to output pentode. Full-wave rectifier; smoothing by loud speaker field coil.*

Gramophone.—*Garrard Induction Motor.*

Controls.—*(1) Single tuning control. (2) Combination on-off radio-gramophone change-over and wave-range switch. (3) Reaction. (4) Combined radio and gramophone volume control.*

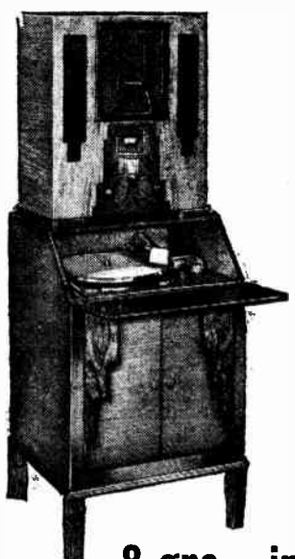
Light-ray tuning.—*A line of light moving across a graduated scale clearly indicates the station being received.*

"Satisfactory all-round performance and outstanding quality."
Vide "The Wireless World," Jan. 13th, 1933.

23 Gns. (Walnut or Oak) **29** Gns. (Record Changer Oak)

Write for catalogue and nearest authorised dealer.

MAINS RADIO GRAMOPHONES LTD.,
Vaughan Works, BRADFORD, Yorks.
'Phone: 6795. 'Grams: "Emmargee."



your present set

plus APOLLO Playing Desk

equals a fine Radio-Gram

8 gns. in REAL WALNUT
ALSO TO MATCH VARIOUS SETS

As illustrated, with Collaro Induction motor, and pickup, automatic current stop, volume control, Record cupboard—**8 gns. or 12 payments of 15/6. Cabinet only,** without motor or pickup, **£3.15.0 Table Models:** Electric Motor, Walnut, **£5.17.6, or 13/6 and 11 payments of 10/6;** Leather Cloth, **£4.17.6 or 12 payments of 9/-.** Spring motor, Walnut, **£4.4.0 or 10/- down and 11 payments of 7/6;** Leather Cloth, **£2.18.0 or 7/6 down and 11 payments of 5/6.**

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Ask your Radio Shop, or write to—
APOLLO GRAMOPHONE CO., LTD.,
4-5, Bunhill Row, London, E.C.1.

MILNES H.T. SUPPLY UNIT

is ideal for driving the Quiescent Push-Pull Two

The circuit gives you mains volume—the Milnes Unit gives reliability equal to the mains

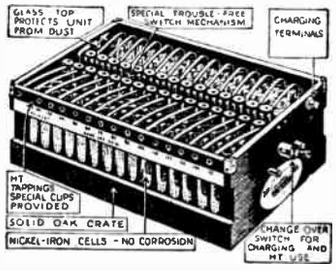
A battery-driven two-valve set which will work a moving coil speaker at ample volume is revolutionary, and so is the Milnes Unit method of supplying H.T.

THE MILNES UNIT IS A NICKEL-IRON ACCUMULATOR WHICH RECHARGES ITSELF AUTOMATICALLY FROM THE L.T. ACCUMULATOR. Unlike ordinary lead-acid H.T. accumulators, it does not need to be sent for recharging. It is left permanently coupled to the L.T. and is always fully charged. Nor can it be harmed by overcharging or neglect.

Unlike dry batteries, there is no inevitable voltage drop and no crackling.

The Milnes Unit is practically everlasting. It improves with hard work.

But the Milnes Unit is not merely suitable for economical sets such as the Quiescent Push-Pull Two. It has an output equal to any demand.


GLASS TOP PROTECTS UNIT FROM DUST
SPECIAL TROUBLE-FREE SWITCH MECHANISM
CHARGING TERMINALS
H.T. TAPPINGS SPECIAL CUPS PROVIDED
SOLID OAK CRATE
NICKEL-IRON CELLS - NO CORROSION
CHANGE OVER SWITCH FOR CHARGING AND H.T. USE

One user writes:—
"I have a discharge of 70 to 80 m/A from a single-capacity Milnes Unit."

Another user says:—
"My set is the New Century Super Het (6 valves) Celestion PPM 79 speaker, which I had previously run with dry 120 v. Super Capacity H.T. It is now improved fully 100%."

The Milnes H.T. Supply Unit improves every set. Many enthusiasts are scrapping mains eliminators in its favour for the sake of the greater purity and entire absence of background hum. It is the most economical and the least troublesome of all sources of H.T. supply.

PRICES IN GT. BRITAIN AND N. IRELAND.	90 volt ..	£2 18 0
	120 volt ..	£3 16 0
	150 volt ..	£4 14 0

Electrolyte extra.

Ask your dealer to show you the Milnes H.T. Supply Unit or, if he has not one in stock, send the coupon to us for full particulars.

MILNES RADIO CO., VICTORIA WORKS, CHURCH ST., BINGLEY

Please send me full particulars of the Milnes H.T. Supply Unit. No obligation.

Name.....

Address.....

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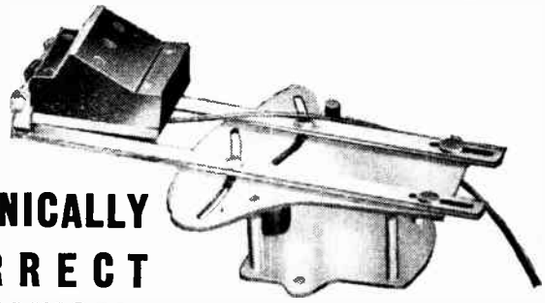
B.2.

Keir-Dawson—Bradford

PERFECT TRACKING WITH THE SIMPSON ARM & PICK-UP



TECHNICALLY CORRECT MECHANICALLY PERFECT!

A Simpson Straight Track Arm and Pick-Up is the only instrument which will give you perfect gramophone reproduction through your radio set. Here are a few points which show that the Simpson has no equal in value at the price :—

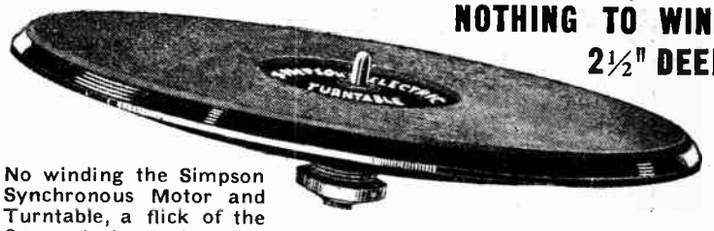
1. Record wear minimised.
2. 100% Straight Track ensured.
3. Needle scratch eliminated.
4. Life of records doubled.
5. Tone natural and pure.
6. Fits any gramophone.
7. A scientifically designed and produced instrument.
8. Incorporates ***Automatic Stop***.

Consider these points in comparison with others and your choice of the Simpson will be fully justified. Ask your Dealer. Fill in coupon below for the Free booklet describing this Pick-Up and Arm.

32/6 COMPLETE

SIMPSONS SYNCHRONOUS MOTOR & TURNTABLE!

CONSTANT SPEED
NOTHING TO WIND
2½" DEEP



No winding the Simpson Synchronous Motor and Turntable, a flick of the finger starts or stops it, and with an almost negligible electricity consumption revolves at a constant speed of 78 (correct speed) with perfect silence. Consider the following points when purchasing an electric gramophone motor and see why the Simpson is supreme :—

1. Only 2½" deep.
2. Nothing to go wrong.
3. Fits any gramophone.
4. Takes five minutes to fix.
5. Sizes 10" and 12".
6. Costs less than ¼d. per week to run.
7. Goes by itself.
8. Constant speed of 78 (correct speed).

Buy yours to-day! It is amazing value, and can be obtained from all good retailers for 39/6.
Fill in coupon below for your Free copy of booklet describing this motor.

39/6 COMPLETE

FREE

To interested readers of "Wireless World" we shall be pleased to send our illustrated Folder (containing all technical details) on receipt of complete coupon.

SIMPSONS ELECTRICALS LTD.
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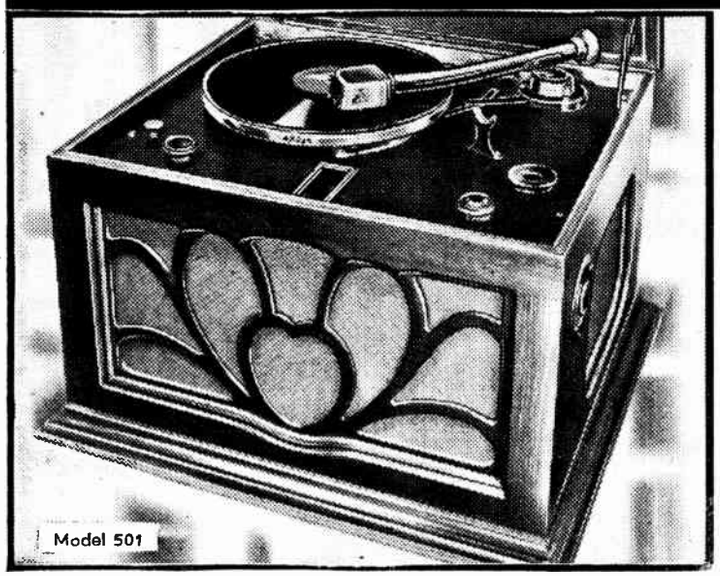
RADIO = GRAMOPHONES

THE WIDEST RANGE OF ALL TO CHOOSE FROM!



To-day there are 15 different and distinct reproducing instruments made by "His Master's Voice"—and no less than five are all-electric radio-gramophones. Think what a breadth of choice that gives you ! If you want a table radio-gramophone with cabinet radiogram performance —there is the 'Transportable' model, at its unprecedented price, a moderate price even for a straight wireless set.

If you want the utmost that modern science can provide for home entertainment — there is the 'Superhet Ten Autoradiogram' with its improved automatic record-changing device. Those are only two of the five. Simply decide whether you want ten valves, seven, four—whether you need automatic record-changing—and ask your dealer to let you hear the appropriate model. But, above all, notice its tone. *Throughout the whole range of radio-gramophones under the mark of "His Master's Voice," reproduction is 'true-to-life.'*

Transportable Radiogram (above).

Four valves (inc. rectifier). A.C. or D.C. Band-pass tuning. Moving coil loudspeaker. Combined operating switch. Single tuning knob. One volume control. Illuminated wavelength scale. Mains aerial. Electric gramophone motor. Walnut cabinet with felt-lined lid. 19 guineas or by hire purchase.

Superhet Radiogram Seven (Model 523).

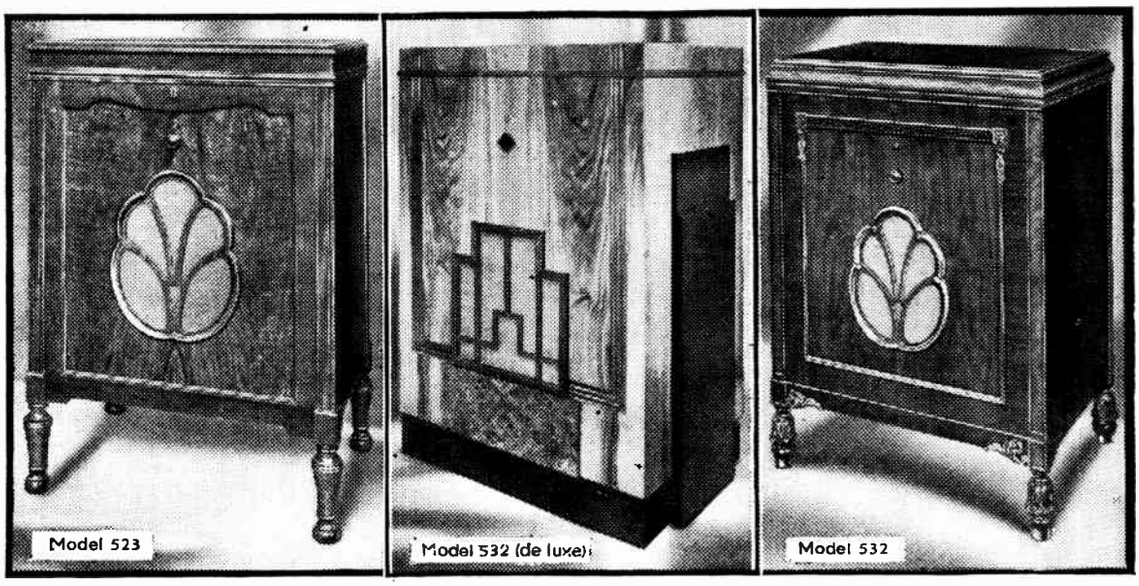
A seven-valve (inc. rectifier) all mains superhet radio receiver — electrically reproducing gramophone. Energised field moving coil speaker. Electric gramophone motor. Tone control. A.C. only. Walnut cabinet. 48 guineas or by hire purchase.

Superhet Ten Autoradiogram (Model 532).

Ten valves (inc. rectifier). New tone or brilliance control. Improved automatic record-changing mechanism, allowing 10 records to be played consecutively, one record to be repeated indefinitely, or the changer to be thrown out of action so that the instrument can function as an ordinary electric gramophone. Electrically excited speaker. Variable mu valves. 100-160, 200-260 volts, 50-60 cycles. A.C. only. Imposing walnut cabinet. 80 guineas or by hire purchase.

Superhet Ten Autoradiogram de Luxe (Model 532).

The Superhet Ten Autoradiogram in a dignified hand-made cabinet specially designed for a modern background. Main panels of finely figured walnut; side and base of dark macassar ebony; panel below grill, of fine burr walnut. Workmanship and finish in the finest tradition of cabinet-making. 95 guineas. Model '531' in the same cabinet, 85 guineas. Either model may be obtained by hire purchase.



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As many of the circuits and apparatus described in these pages are covered by patents, readers are advised, before making use of them, to satisfy themselves that they would not be infringing patents.

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EDITORIAL COMMENT

Broadcasting Hours

Should They Be Continuous?

FROM time to time the question of broadcasting hours becomes a topic for discussion, and opinions differ widely as to how many hours a day broadcasting should be "on tap." Some people are in favour of "continuous performance" which will provide for all B.B.C. stations to be on the air from early morning till late at night with no interruptions. On the other hand, there are those who consider that if we had only a few hours' broadcasting every day the programme organisers would have a chance of putting out the very best programmes possible, and that the public would, as a result, learn to treat broadcasting with more respect and value the entertainment provided.

There is much to be said in support of either of these two extreme views. We can well recollect that in the early days of broadcasting it was quite the custom to make special efforts to arrange other commitments so as not to interfere with listening to some special items of the broadcast programme. From time to time we have recommended that the B.B.C. should make a greater effort to announce, in advance, important broadcasts which they are arranging. The very fact that broadcasting can be listened to at almost any time tends to make the listener indifferent, whereas strictly limited hours of broadcasting might do much to encourage more regular listening and would also facilitate a raising of the general standard of the programmes. To fill every hour of the day with a variety of transmissions, all up to a high standard, would be a task probably beyond the reach of fulfilment, even if talent and money were far more plentiful than at present.

The experiment might be tried by the arrangement, say, once a week, of a couple of hours' transmission which the B.B.C. would announce as their best effort.

Interference

Procrastination Must End

IN spite of the urgent need for control over electrical interference and the very widespread public concern at the rapid increase of this nuisance, certain electrical associations seem to be unwilling to show real enthusiasm to co-operate. Probably it is felt by the officials of these organisations that any compulsory modifications to electrical equipment offered for sale will prove an embarrassment to the electrical manufacturer, and that consequently the longer any compulsion in this direction can be delayed the better it will be for their membership.

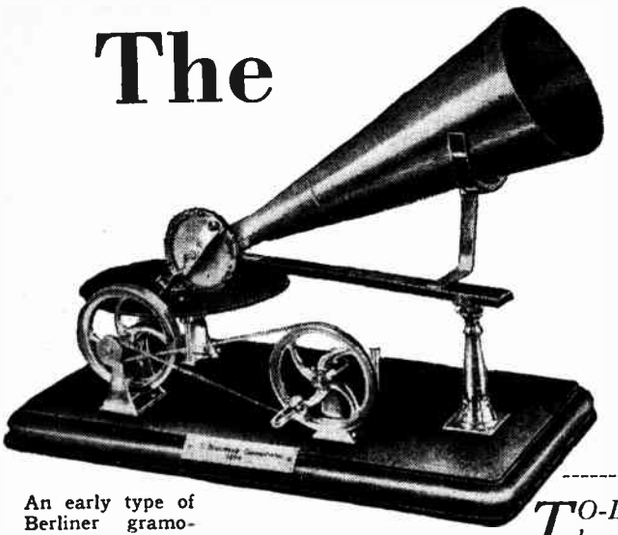
This is surely a very short-sighted view to adopt. It is inconceivable that electrical interference can be permitted to continue indefinitely, when almost every member of the public is interested in wireless reception and suffers, to a greater or lesser degree, from the effects of electrical disturbances. Facing the fact, therefore, that interference has got to be stopped, or at least curtailed in the future, it is far better that remedies should be found at once. The longer this is delayed the more expensive it is going to be for the electrical industry as a whole.

General co-operation on the part of the organisations representing the electrical industry would pave the way for immediate action to the benefit of everyone concerned, and it would especially remove prejudice against electrical apparatus which is at present growing because of the nuisance of interference.

The Evolution of the Gramophone

From the Early Talking Machine to the Modern Radiogram

By RICHARD ARBIB
(The Gramophone Company)



An early type of Berliner gramophone.

TO-DAY the gramophone has become such a normal adjunct to civilised existence that the public may be forgiven for accepting it without considering the slow and laborious process which has led to its ultimate development in the modern highly complex radio-gramophone. Eighty years have now elapsed since its fundamental principles were first made the subject of experiment.

IT is a far cry from a wavy line inscribed by a hog's bristle on a lamp-blackened sheet of paper to the modern radio-gramophone. The former was the first recording of the human voice—the latter, as we all know, is the latest form of reproducer. In 1857 a French printer, Leon Scott, conceived the idea that he might be able to fix a sound wave upon paper. He wrapped round a drum a sheet of paper smeared with lamp-black; to a stretched goldbeater's skin he attached by sealing-wax a hog's bristle which rested on the surface of the paper. In front of the crude diaphragm he mounted a horn. Scott found that when he rotated the drum and spoke into the horn a wavy line was traced in the lamp-black and surface of the paper. He noted that if he did not speak the line was straight. He also discovered that repetitions of the same sound gave the same tracings. Scott called the tracings in the blackened paper the "Phonautograph," and deposited with the Academy of Sciences in Paris an article entitled the "Principles of Phonautography."

Although in this treatise he expressed the hope that it would be possible to record and subsequently reproduce sound, he did not specify any methods by which this might be brought about. The crude tracings made by this French printer were, in fact, the first lateral recordings of the human voice, upon which the gramophone is based.

The Phonograph

Another Frenchman, Charles Cros, deposited a treatise with the Academy of Sciences eighteen years later, entitled "The Process of Recording and Reproducing Audible Phenomena." Although he did not demonstrate his invention practically, he described the principles upon which the "Phonograph" was subsequently founded.

The scene of the development of the talking machine then passed to America, where, in July, 1877, Edison first recorded his voice by embossing a paraffin paper wrapped round a drum. In August he drew a sketch of his first "Phonograph," which was made to his specification by a mechanic, Krusei, for eighteen dollars. This machine is now in the South Kensington Museum. In this instrument a cylinder is mounted in the centre of a threaded spindle, which passes through two uprights fixed to a wooden base. The male thread of the spindle passes through a female thread in one of the uprights, and to the end of the spindle is attached a small handle. On one side of the cylinder is mounted a ferrotype plate, in the centre of which is a sharp steel needle.

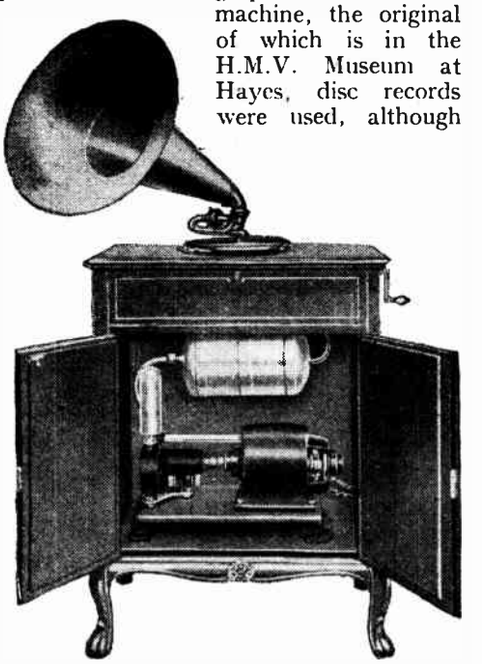
This diaphragm was intended for recording; on the other side of the cylinder was mounted a paper diaphragm, to the centre of which was fixed a rounded pin. Both these crude forms of needles were adjustable by springs to make contact with the cylinder. A sheet of tinfoil was wrapped round the cylinder, and the sounds of the voice indented thereon. Although Edison's "Phonograph" excited considerable interest in its early days, it did not become a commercial success, for its sponsors did not appreciate its entertainment value, and only exploited it as an adjunct to business, to replace, for instance, stenographers. The indenting of the tinfoil introduced distortion into the voice, and for fifteen years the "Phonograph" was only regarded as a scientific toy.

The Graphophone

Other inventors were now striving to produce a better machine, and in 1885 the "Graphophone" was patented by C. M. Bell and C. C. Tainter, of telephone fame. Their instrument was very similar to Edison's, but the difference between their records and those of Edison's was that, whereas Edison's were *indented* by an up-and-down line, the "Graphophones" were *cut* by an up-and-down line. Both the "Phonograph" and the "Graphophone" cylinder records employed "hill and dale" recording, the track being of uneven depth.

Two years later The American Graphophone Company (later The Columbia Graphophone Company) was formed to market machines and wax cylinder records made under Bell and Tainter patents. These inventors had, in the previous year, filed an application for the use of wax and a sapphire point as the material and instrument for cutting a record. Litigation between Bell and Tainter and Edison followed, culminating in a working agreement between the two parties.

Other talking machines began to make their appearance, and in 1892 Charles Stroh demonstrated in London the first portable "Phonograph." On this machine, the original of which is in the H.M.V. Museum at Hayes, disc records were used, although they were indented by a sapphire point. No inventor, up to this time, had realised that it was necessary to discover the method by which many duplicates could be made of an original recording.



The Auxetophone with auxiliary blower to give increased output.

The Evolution of the Gramophone

On November 12th, 1887, Emile Berliner, a German subject, who had emigrated to America at an early age, filed his first patent for the "Gramophone." He had, after inspecting a model of the Leon Scott "Phonautograph" at a local museum, become convinced that the future of the talking machine rested in a lateral-cut record; that is, one in which the sound waves were traced in a wave-form of even depth on a surface instead of being indented in the surface.

He also decided that it was necessary to discover a method by which thousands of duplicates could be made from one matrix. Berliner's first records were made by covering a small paper-covered cylinder with soot from a lamp. After the voice had been recorded thereon he fixed the tracings by pouring on a shellac solution. He cut the paper tube into strips and arranged for a photo-engraver to etch the tracings into a piece of flat zinc. He then considered his first crude gramophone in order that he might test his theory that the human voice could be reproduced through a lateral-cut record. He took a telephone receiver, and, after sawing off the front, he affixed to the diaphragm a stylus, at the end of which was attached a steel pin. By moving the point of the pin over the photo-engraved lines on the zinc by hand he was able to reproduce snatches of his own voice from the flat piece of zinc.

Berliner then proceeded to construct a gramophone with a turntable similar to those with which we are so familiar. This machine was hand-driven, but had a fly-wheel which assisted in obtaining constant speed. By means of a round glass plate, blackened over by smoke, a flat, circular record was made, and by a photo-engraving process the first flat disc record suitable for reproduction came into existence.

Master Records

It was at this time that Berliner discovered that the grooves of the record itself were sufficient to take the sound-box across the disc. He included this observation in his patent, and for many years it was a master patent of the "Gramophone." The inventors of the "Phonograph" and "Graphophone" had used screw mechanisms to take the needle across the record.

Although Berliner realised that it would be simple to make a matrix by recording in wax and then depositing it in an electrolytic bath and growing a copper negative, he was prevented from carrying out his theory by the fact that Bell and Tainter had already patented the methods for recording on a wax surface. Up to 1901 Berliner's master records were made by covering zinc discs with a composition of beeswax. After the lateral tracings had been made from that, the record was placed in an acid bath and the sound tracings etched. The matrix was then made by a copper deposition, and the first records pressed in celluloid. Subsequently, records were made in vulcanised rubber, and eventually in a shellac composition.

Marketed in 1924—a gramophone embodying the Lumiere diaphragm.

First Motor and New Sound-box

In 1897 Berliner's chief inventive work in connection with the gramophone had been accomplished, and its rapid development as a commercial instrument then passed into the hands of two of his colleagues. A year previously, Alfred Clark, who had originally worked with Edison, but, realising the immense superiority of the lateral-cut record, had transferred his activities to Berliner, had taken out a patent for the use of a governor in conjunction with the hand-driven gramophone.

Berliner and Clark realised that it was necessary to incorporate a suitable spring motor before the gramophone would become a commercial success for home entertainment, and Clark therefore set forth to find a machinist who could produce a suitable motor. Spring motors had been fitted to the early phonographs, but none of them had been satisfactory owing to excessive noise and uneven running. His first visit was to the workshop of Eldridge R. Johnson, a machinist, in Camden, New Jersey.

After a few weeks' experimenting, Johnson produced a satisfactory sample motor, and then made supplies for all the early Berliner gramophones. Alfred Clark had by this time realised that the first Berliner sound-box was very unsatisfactory; the stylus bar was clamped across the face of the box, and was held so rigidly that after a few playings a record was completely worn out. Despite the great improvements in record matrix making and record pressing (due principally to the substitution of shellac composition pressing material for vulcanised rubber), the inefficiency of this sound-box did not enable the best results to be obtained from the improved records. Clark realised that a much lighter and freer stylus bar was necessary, and worked out an experimental model. He then handed this to Johnson, who perfected it in order that commercial models could be produced.

An early radio-gramophone produced by the H.M.V. research laboratories at Hayes in 1923.

Wax for Recording

Clark-Johnson sound-boxes were introduced on the Berliner gramophones in 1897, and remained as standard until 1902 when a modified box was introduced to cope with the further improved records owing to the adoption of wax as a recording material. It is interesting to note that the development of these two sound-boxes was due to improvements in records. In fact, throughout the history of the gramophone, the development in instruments has followed the improvements in recording.

The Clark-Johnson sound-box is probably the most familiar in the world, for it was the one fitted to the small gramophone in the famous "His Master's Voice" picture. The incorporation of the spring motor and the introduction of the Clark-Johnson sound-box were responsible for the rapid hold that the gramophone gained on the public between 1897 and 1903. It is also interesting to note that these two colleagues of Berliner's, Johnson and Clark, were to become the founders of the two largest gramophone companies in the world. In the first year of the twentieth century the Victor Talking Machine Company was formed in Camden in order that Berliner patents and the Johnson improvements of these patents could be combined in one corporation. Eldridge R. Johnson became its president, and remained so up to 1926.

In 1909 Alfred Clark became managing director of The Gramophone Company in London, and is now chairman of the great merger company, Electric and Musical Industries, combining the interests of "His Master's Voice," Columbia, Marconiphone, Parlophone, and Regal-Zonophone.

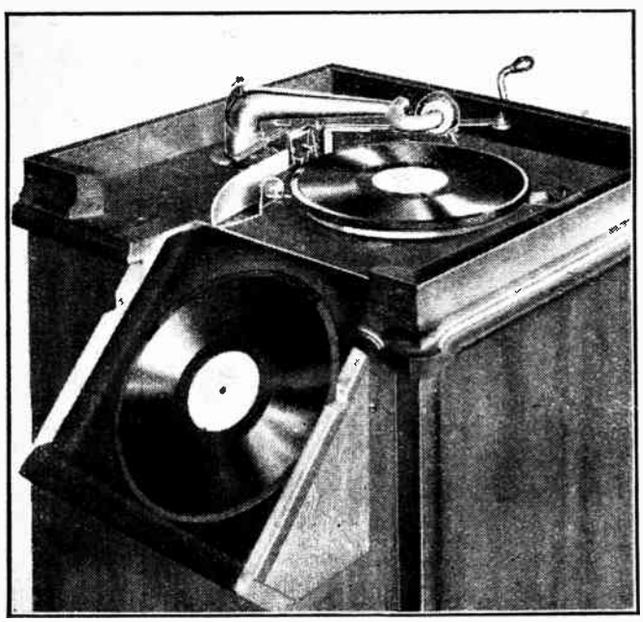
The Evolution of the Gramophone—

By 1902 the Bell and Tainter patents for sound recording had expired, and lateral disc recording on wax then became universally used in place of the old etching in zinc method. Great artists, such as Caruso, Melba, and Patti began to record for the gramophone, and thus the talking machine became to be appreciated as an instrument of entertainment. On the record side there was no great step forward between the years of 1902 and 1925, with the exception of the introduction of a practically non-scratch record by the Columbia Graphophone Company in 1922.

Early Public Address Gramophones

The quality of reproduction from the gramophones likewise did not meet with any great improvements. In 1903 the first instrument to incorporate a tone arm was placed on the market, and by 1905 two types of gramophones were evolved for playing music to large crowds of people. The first, the "Triplephone," required a great deal of skill for satisfactory operation. Three turntables were mounted on top of one another and driven by a single motor, a separate horn and sound-box was played from each record, and it was naturally necessary to ensure that the needles were placed on the same copies of the records in exactly the same place.

A very much more expensive machine,



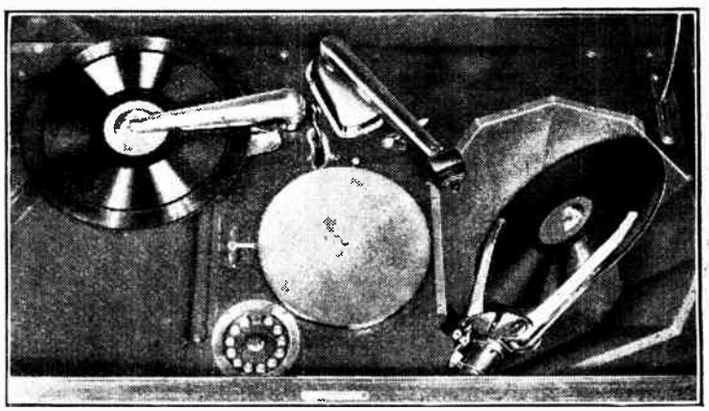
Produced at Hayes in 1920 and believed to be the first experimental automatic record changer. Five records could be handled.

the "Auxetophone," enjoyed considerable popularity for some years. In this instrument a small air valve replaced the mica-diaphragm in the sound-box. An electric motor actuated bellows which pumped air past the valve at a pressure of 2 lb. per square inch. The sound from the record was, in point of fact, blown out of the horn by compressed air.

Up to 1911 the horns of gramophones had been external, but manufacturers then realised that, however beautiful they might make the cabinets, the horns could not fail to be other than ugly in the home. Internal horn machines then made their appearance, and, although they increased the popularity of the gramophone commercially, it cannot be said that their reproduction was as good as their predecessors. The horns had to be limited in size and bent to fit into the cabinets. There was, in fact, little improvement in quality of reproduction between the years 1906 and 1924. To make the gramophone even more attractive, attention was directed to automatic record changing, and in 1920 the first experimental design was produced at the H.M.V. works at Hayes. Eldridge R. Johnson, whilst on a visit to England from America, had conceived the idea of the automatic gramophone, and made sketches of the instrument. On arrival at Hayes they were handed over to a mechanic named Tompsett, who, in a fortnight, had produced a working model. Five records were mounted on top of one another on a turntable and rejected after playing. The instrument was driven by a spring motor. The directors of the company did not think the time was ripe for an instrument of this kind, but between the years 1920 and 1927, when the first automatic gramophone was introduced to the public by H.M.V., twelve different experimental models had been produced at Hayes.

At the same time experiments were taking place in the development of a large-diaphragm gramophone. Before the War the Pathé Company in France had introduced a gramophone in which their "hill-and-dale" disc records were played upside down by a needle attached to the centre of a paper cone. The Gramophone Company acquired the patents for a pleated diaphragm reproducer from a French experimenter, Lumiere, and after four years' experiment at Hayes the first Lumiere gramophone was marketed in 1924. A special paper diaphragm was pressed, folded, and then dipped into an acetate solution. The diaphragm was mounted upright at right angles to the record, and was supported by a ring which was carried by an arm across the face of the disc, a needle was fixed in a stylus which was connected by a long wooden bar through a bell-crank lever fastened to the centre of the diaphragm. The reproduction from this machine was a relief from the rather hollow horn quality the public had been accustomed to up to then.

By 1923 the first experimental single-dial combined wireless and gramophone had been produced in the Research Laboratories at Hayes. B. Mittell, who had recently joined the company, had taken charge of electrical research. After months of experiment he evolved a method of cam control which adjusted the capacity of a single condenser and simultaneously carried the reaction coupling. Many instruments in the United States and other countries used this patent. This early radio-gramophone was not produced commercially, for within a few months the possibilities of recording by an electrical process was engaging the whole attention of the Research Departments of the large gramophone companies. In July, 1925, the first electrically recorded records were issued in England by "His Master's Voice." Once again an improved method of recording demonstrated how inefficient were the reproducing instruments.



H.M.V. automatic record changer with record turning-over device. This model has not been placed on the market.

Matched Impedances

By the end of the year the new gramophones embodying long horns and the partial use of matched impedance were placed on the market. Up to this time the construction of horns and sound-boxes had been by trial-and-error methods. In the Bell Laboratories in America two engineers, Maxfield and Harrison, had turned their attention to the scientific production of logarithmic horns used in connection with scientifically produced sound-boxes. The new "His Master's Voice" machines were a development of these experimenters' researches. Two years later these models were replaced by ones in which the principles of "matched impedance" were applied throughout from the stylus bar of the sound-box to the mouth of the horn. An unobstructed pathway for the sound waves from the tip of the needle to the outer opening of the horn was obtained. The sound-box was

The Evolution of the Gramophone—

matched to the tone arm, and the components were matched to each other, and there was no reflection of the sound waves during their passage through the gramophone.

In these machines all-metal sound-boxes were employed in which specially constructed aluminium diaphragms reduced edged stiffness, and enabled a large area of the diaphragm to vibrate evenly. This gave improved reproduction of the bass notes, and the flexibility of the stylus bar reduced record wear by enabling the needle to track the larger sound waves of the electrically recorded records. By a clever method of folding, a truly exponential horn of six and a half feet in length was fixed in an ordinary cabinet gramophone. This type of tone chamber was called the "Re-Entrant." At the same time the Columbia Graphophone Company had commenced to market gramophones in which bifurcated horns were used in conjunction with new sound-boxes.

Meanwhile, experiments had taken place in the electrical reproduction of records, and, although experimental pick-ups had been produced at Hayes as early as 1923, the first electrical reproducer to bear the H.M.V. trade-mark did not make its appearance until 1927. A year previously the Brunswick Company had begun to market the "Panatrope," the first commercial machine to utilise an electrical pick-up, amplifier, and loud speaker for reproducing records.

Freak Machines

The "boom" years of the gramophone, 1927-1928, led to numerous companies being floated for exploiting some extraordinary machines. In many cases only experimental models were produced, and all the companies had short lives. An automatic gramophone which played records vertically, a portable gramophone which went back to the old cone diaphragm method of reproduction, and records which reverted to the original celluloid base, were a few of the products for which company directors prophesied abundant sales. Most of us will be familiar with the progress during the last four years; the combined instrument — the radio-gramophone — is now made by many manufacturers, and has established itself as an instrument of very wide appeal both for the home and for general entertainment purposes.

Automatic record changers have been simplified, and now occupy little more space in the cabinet than the ordinary electric motor. In view of the frequent cry for a changer that will turn records over, it is interesting to note that an experimental model was demonstrated before the Royal Society of Arts in March, 1931. This instrument, produced in the H.M.V. Research Laboratories, can be set to play twelve records, ten- or twelve-inch mixed, in succession. By pressing a button on a remote volume control, either one side only or both sides can be played at will. It should be emphasised that the machine is unlikely to be produced commercially, as the cost of production is hardly justified. Compact automatic mechanisms can now be produced so cheaply for playing complete works which are specially pressed for use on automatic machines. Progress in the development of the radio-gramophone is unlikely to be so rapid in the future as it has been during the last five years. Excellent reproduction with satisfactory operation can now be obtained for a comparatively small sum.

In a short article of this nature it has only been possible to sketch briefly the development of the gramophone. Readers who are anxious to learn more of the interesting history and development of the talking machine are referred to the following publications, some of which may be out of print:—"Modern Gramophones and Electrical Reproducers," by P. Wilson and G. M. Webb; "The Romance of the Gramophone," by T. Lindsay Buick; "Emile Berliner," by F. W. Wile; "The Reproduction of Sound," by Henry Seymour; and Cantor Lecture delivered by A. G. D. West before the Royal Society of Arts on the "Recording and Reproducing of Sound."

FERROCART COILS IN GERMANY

(1) The Ferrocart discs are sawn into two parts.
(2) Sorting the cores into categories according to their magnetic properties.
(3) Winding the coils on removable formers; adjacent turns are secured by adhesive.
(4) Inserting the two halves of the Ferrocart core.
(5) Matching by variation of the air gap (see inset).

THESE photographs, from our Berlin correspondent, show various stages in the manufacture of the new high-efficiency tuning coils wound on iron-powder formers, and disclose the secret of how the Ferrocart core is placed inside the winding—a problem akin to that of the apple and the dumpling. The initial sorting of cores into categories is necessary because individual specimens vary slightly in their magnetic properties. Each category requires a slightly different number of turns of wire for a given inductance value. Instead of winding the coil directly on the core, it is first wound on a mandrel, or removable former, and the two sections of the Ferrocart disc are then inserted.

The critical operation of inductance matching is carried out with the help of oscillators and a means for making fine air-gap adjustments by rocking one section of the coil. Finally, the sections are secured by filling up the gap with a sealing compound.

Pick-up Circuits

Gramophone Reproduction from the Radio Receiver

By W. T. COCKING

THE electrical reproduction of gramophone records offers such striking advantages over purely mechanical methods that it is not surprising to find it becoming more and more generally employed where high-quality reproduction is required. Any wireless receiver capable of giving good quality at a reasonably large volume can readily be modified for the electrical reproduction of records. Apart from the motor and turntable, which will often be available from an existing mechanical gramophone, the only essential components are a pick-up and a volume control potentiometer. Since most present-day sets include a detector valve transformer coupled to the output pentode or triode, and these will provide sufficient amplification for any normal type pick-up, it is necessary only to connect the extra components to the input of the detector valve.

In the case of a battery receiver the connections are simplicity itself, and are illustrated both diagrammatically and pictorially in Fig. 1. The potentiometer R is provided for the volume control, and it can with advantage be of the specially graded type, so that the changes of volume are even throughout the range. The straight-line type, however, is quite as satisfactory electrically, but it is not so pleasing in its operation. The really important point is the value selected for its total resistance, since it can have a marked effect upon the quality of reproduction. If the resistance be less than a certain value, which depends upon the type of pick-up, the higher musical frequencies will be greatly attenuated, and it is wise, therefore, to adhere to the pick-up makers' recommendations in this respect.

It is possible, however, to turn this effect to useful account, for it often happens that the high notes are unduly strong—particularly in cases where the output valve is a pentode. By using a volume control of lower resistance than usual, or, alternatively, by shunting the pick-up by a variable resistance as shown in Fig. 2, the high-frequency response can be reduced to the desired degree. In the majority of cases, therefore, some experimenting with different resistance values will be well repaid.

Automatic Bias

In a battery set it will suffice if the bias battery has a potential of 1.5 volts, but in the case of a mains set, to which the same connections are applicable, 3 volts bias should be used. This, of course, is due to the fact that with most mains valves there is a flow of grid current until the grid is at least 1 volt negative with respect to its cathode, whereas with battery valves grid current ceases at about zero bias. In general, however, it is desirable to employ automatic bias in a mains set, and the circuit of Fig. 3 should then be used. The bias resistance can be given a value of 1,000 ohms, since this value covers all normal type detector valves, such as the M.H.4, M.H.L.4, AC/HL, 354v., 165v., and 41MHL.

The results obtainable with these simple circuit arrangements represent a considerable improvement upon the usual mechanical reproduction, but a closer acquaintanceship with the apparatus reveals that there is something lacking, and the quality rarely comes up to the standard set by broadcasting. The usual defects are—needle scratch, hard quality, and rattling, and of these the latter is often the most annoying.

NEARLY every receiver is capable of giving good reproduction when a gramophone pick-up is connected. It is, however, important to consider the value of the volume control resistance which, if incorrect, may affect the frequency response. A needle scratch filter and resonance eliminator are also given consideration in this article.

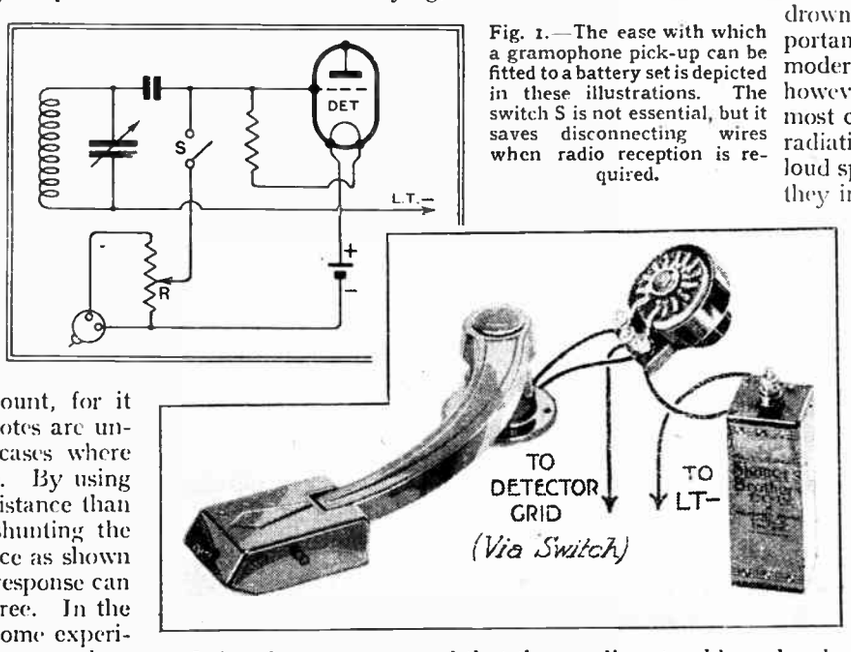


Fig. 1.—The ease with which a gramophone pick-up can be fitted to a battery set is depicted in these illustrations. The switch S is not essential, but it saves disconnecting wires when radio reception is required.

It is, of course, assumed that the amplifier itself is free from blame, for this is a trouble which cannot be taken into account in this present article. If the performance is satisfactory on radio, however, and the gramophone connections are correctly made, it is usually safe to regard the amplifier as above suspicion. The rattle which is so common is due to the purely mechanical chatter of the pick-up, and it may be of two kinds. If it occurs at low frequencies it is due to the needle being unable to follow the groove of the record, showing poor pick-up design. Increasing the weight of the pick-up will help.

The general type of rattle, however, is at a high frequency, and it is due largely to radiation from the needle and its holder. By the very nature af the pick-up these must vibrate in accordance with the dictates of the recording, and they will consequently act upon the air and set up vibrations in it. At low frequencies they can move an insufficient quantity of air for the sound to be audible, but this is far from being the case at high frequencies. Musical notes in the neighbourhood of the natural resonance frequency of the needle and its holder are most strongly reproduced by this direct means, and it is a common experience that, with the amplifier switched off, the recording can be followed by the direct radiation from the pick-up.

When the amplifier is working and the volume level is high, this radiation is drowned, and may be of no importance. In cases where only moderate volume is required, however—and these are the most common—both the direct radiation and the output of the loud speaker can be heard, and they interfere with one another to produce a distressing rattling effect. There is one cure, and one only: the pick-up must be enclosed in a sound-proof cabinet. A simple lid covering the playing-desk affords an appreciable reduction in the noise, but to obtain complete freedom it is usually essential for the lid to be thoroughly packed with felt.

We come now to the second source of trouble — harsh reproduction. This is usually due to the high-frequencey resonance of the pick-up, which accentuates unduly those frequencies in the neighbourhood of 3,500 cycles. The harshness may be reduced by the simple expedient of lowering the general high-frequency response, either by shunting the pick-up by a low-value resistance or by fitting one of the standard type scratch filters. At best, however, these remedies are only partial,

Pick-up Circuits—

for if the resonance be sufficiently reduced the really high frequencies are obliterated altogether. A better method is to fit a tuned acceptor circuit to the pick-up, so that only those frequencies close to the resonance are reduced, and both lower and higher frequencies are left untouched.

Needle scratch is the next point of importance. It is undoubtedly of high frequency in its origin, and the usual method of eliminating it is to fit a low-pass filter to prevent all frequencies above a certain limit from being reproduced. The difficulty comes in deciding where this upper limit shall be. The frequencies recorded extend up to some 5,000 cycles, but if we reproduce these fully, and cut-off only at a higher frequency, most of the scratch will still remain. On the other hand, if we cut out most of the scratch we shall also remove most of the frequencies above about 3,000 cycles. As a result, the usual scratch filter is a compromise, and a reduced response is obtained above about 2,500 cycles and some scratch is allowed to remain.

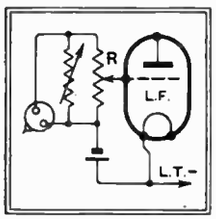


Fig. 2.—A variable resistance may be connected in parallel with the pick-up if the reproduction is too high-pitched.

Pick-up Resonance

It was recently pointed out in this journal,[1] however, that the greater portion of the scratch is caused by the high-frequency resonance of the pick-up, and that if this resonance could be removed the majority of the scratch would also vanish. We thus come back to the tuned acceptor circuit mentioned above, and practical tests show that this is capable not only of removing the harshness due to the high-frequency resonance, but the major portion of the needle scratch.

The arrangement is very simple, and is illustrated in Fig. 4; apart from the usual volume control potentiometer, the only components needed are a choke, a condenser, a fixed resistance, and a variable resistance. For a high-resistance pick-up, such as the Marconiphone, the fixed resistance can have a value of 25,000 ohms and the variable resistance a maximum value of some 100,000 ohms. The condenser C should, theoretically, be variable, so that the circuit may be tuned to the exact resonance frequency of the pick-up, but in many practical cases it is sufficient to employ a fixed capacity of 0.001 mfd. The choke L should have an inductance of 2H., and a suitable component would be the Varley 3H. tapped choke.

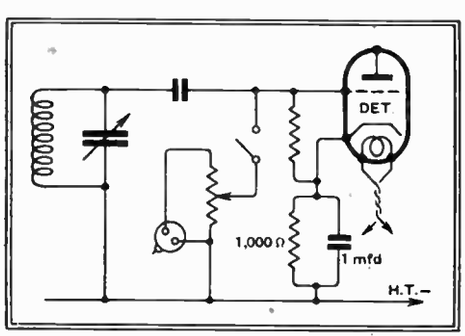
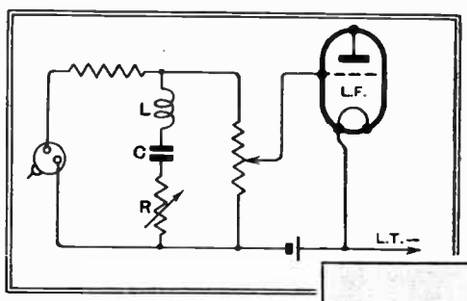


Fig. 3.—The connections for automatic bias in a mains set are shown here. The resistance in the cathode lead can be 1,000 ohms, and a 1 mfd. shunt condenser is sufficient.

The variable resistance should be adjusted to the point at which needle scratch practically vanishes, and the tone of the reproduction will then be appreciably lowered, due to the removal of the resonance. There should be no evidence that really high frequencies are missing, however. The values given above are, of course, suitable only for a high-impedance pick-up, and if a low-impedance type, such as the B.T.H., be employed, it is suggested that the fixed resistance be given a value of 2,500 ohms and that the variable resistance have a maximum value of some 20,000 ohms only. The choke inductance should also be reduced, and about 0.5H., with a capacity of 0.004 mfd., would probably be satisfactory.



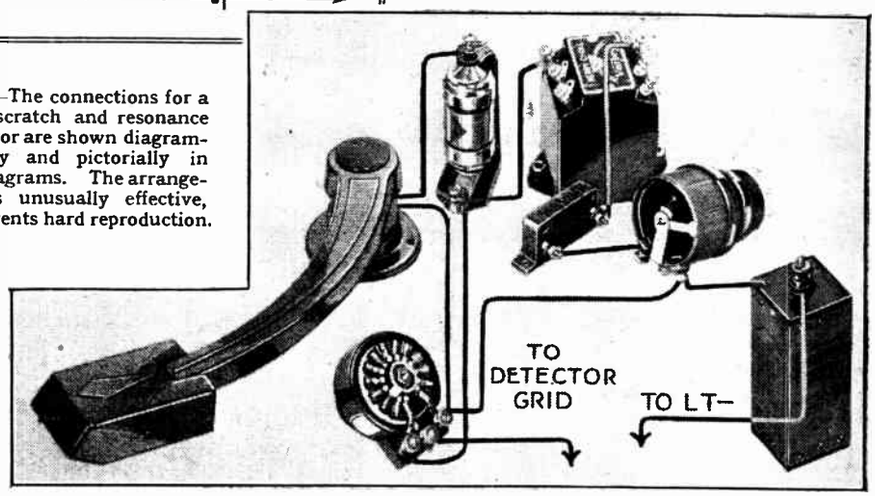


Fig. 4.—The connections for a simple scratch and resonance eliminator are shown diagrammatically and pictorially in these diagrams. The arrangement is unusually effective, and prevents hard reproduction.

By the careful application of this principle a vast improvement to the reproduction can often be made. It will be realised, however, that much depends on the pick-up, and the closer this approximates to perfection the smaller will be the improvement found on fitting the circuit.

The question of a suitable choice of needle is another factor of considerable importance. If an automatic record changer be used there is really no alternative to the Tungstyle type, and, in general, a loud-tone steel or Tungstyle needle will be found the best from the point of view of quality. Where trouble from pick-up chatter is present, however, a half-tone steel needle may prove the best. Fibre needles should never be employed in ordinary circumstances, since most types are incapable of reproducing the really high frequencies, and they wear so rapidly that the quality at the end of a record is noticeably poorer than at the commencement. Where the high-frequency response is excessive, of course, fibre needles may, by virtue of their high-frequency attenuation, give an improved result; the correct course, however, is to redesign the apparatus so that a steel needle gives the correct reproduction.

[1] "Pick-up Resonance and Needle Scratch," by A. W. Stewart, *The Wireless World*, Dec. 16th, 1932.

CLUB NEWS

Making Moving-coil Loud Speakers

MR. R. E. FABIAN, late "Phyvenno," of the *Newcastle Evening World*, recently gave an interesting lecture-demonstration before the Newcastle Radio Society on the construction of a moving-coil speaker. Mr. Fabian was representing his firm, Whiteley Electrical Radio Co., Ltd. We understand that he would be pleased to give a lecture or demonstration to any Radio Society. His address is 5, Egremont Drive, Sheriff Hill, Gateshead.

The Hon. Secretary of the Newcastle Radio Society is Mr. W. Pope, 9, Kimberley Gardens, Jesmond, Newcastle-on-Tyne.

Mains Transformers

AT a recent meeting of the Catford and District Radio and Television Society Mr. F. G. Sawyer, of Messrs. Partridge, Wilson and Co., lectured on "Mains Transformers and Power Smoothing Chokes." Demonstrations and a lantern slide display added much interest.

Hon. Secretary: Mr. H. W. Floyd, 38, Como Road, Forest Hill, London, S.E.23.

Coming Shortly

A HIGHLY attractive programme will fill the spring session of the Southall Radio Society. Coming items include demonstrations of cathode ray, short-wave sets, television and loud speakers. On February 21st members will debate "That pentode valves have more favourable characteristics than a triode for modern set design."

Hon. Secretary: Mr. H. C. Rayner, 114, North Road, Southall.

For Battersea Amateurs

MR. F. G. SAWYER, of Messrs. Partridge, Wilson and Company, recently lectured on "Mains Transformers and Power Chokes" to the Battersea and District Wireless Society.

Full particulars of the Society can be obtained from the Hon. Secretary, Mr. S. F. Harris (G5SH), 93, Salcott Road, Battersea, London, S.W.11.

The Radio-gramophone *of* To-day

The Variety of Types of Instrument

GRADUALLY, reproduction from records has come to be regarded as almost essential as a companion to broadcast reception, and practically every receiver of to-day has provision for the connection of an electrical pick-up. Apart from the instrument specially designed as a combination of gramophone and radio, there are a variety of units available for converting the broadcast set into a combination instrument.

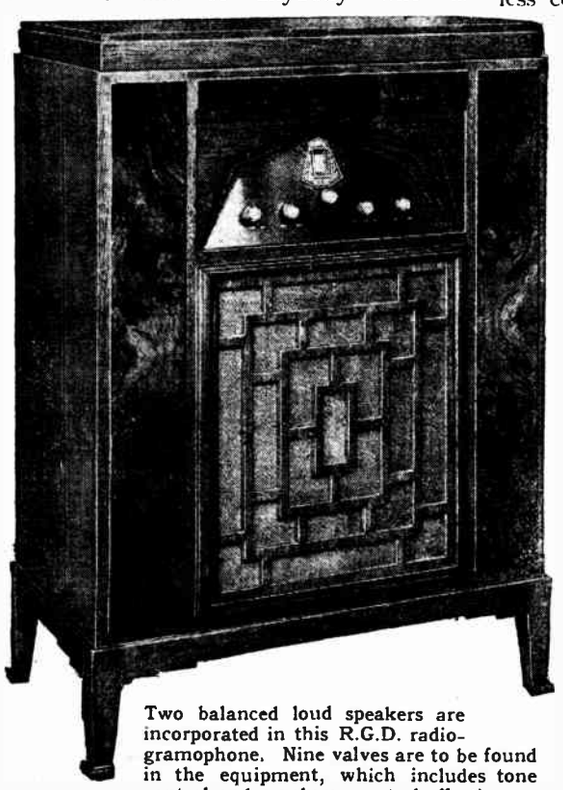
THE name "radio-gramophone" is usually applied only to a completely self-contained installation embracing radio receiver, loud speaker, turntable, and pick-up, but it can, with equal justification, signify a wireless receiver used in conjunction with a "playing-desk," of which quite a number have made their appearance on the market in the past few months. Although the playing-desk is regarded by most people as something quite new, it is actually far older than the complete radio-gramophone; in fact, it might almost claim to be older than the broadcast receiver itself, since a well-known firm marketed one in 1921, over a year before the commencement of regular broadcasting.

The Playing Desk

As it preceded electrical recording by four years, it is rather difficult to see what was its *raison d'être*, for, although it was used with a low-frequency amplifier, the quality was certainly no better than that of the acoustic gramophone.

No real interest in the electrical reproduction of records was evinced, however, until some time later, after several different types and makes of pick-up had made their appearance. A playing-desk represented the first design put forward by *The Wireless World* in the direction of a radio-gramophone, full constructional details of such a device being given in 1927; it is interesting to note, however, that it was not until four years later, in 1931, that commercial firms saw the possibilities of a gramophone unit and pick-up as an accessory for increasing the enjoyment to be obtained from existing wireless receivers.

The simplest form of the radio-gramophone to-day is that in which a pick-up is attached mechanically to the tone arm of an ordinary acoustic gramophone and electrically to the pick-up terminals of an existing receiver. Practically all wireless receivers of to-day are fitted with pick-up terminals, and so anybody who is equipped for wireless and also possesses an ordinary gramophone, can convert his installation into a radio-gramophone at a cost of a pound or two—the price of a pick-up and volume control. Provided that the existing radio receiver is beyond reproach, there is not the slightest reason why the results obtained should not be equal to those obtainable from a completely self-contained instrument; indeed, as separate units the results may be better, unless the self-contained example has been carefully designed as a whole.



Two balanced loud speakers are incorporated in this R.G.D. radio-gramophone. Nine valves are to be found in the equipment, which includes tone control and a volume control effective on both radio and gramophone.

Needle-track Alignment

Admittedly, in certain cases the results will not be quite so good if the receiver is of the small and unduly compact type, for, despite efforts to prevent it, box resonance is often quite pronounced. This must not be taken as an adverse criticism of compact sets generally, for many of them are beyond reproach in the matter of quality of reproduction, whilst, on the other hand, certain console receivers leave quite a lot to be desired. As a general rule, however, one may expect better quality from a receiver that has less congestion at the back and sides of the loud speaker.

One or two important points must be remembered when purchasing a pick-up for use with an existing gramophone. In the less expensive of the mechanical gramophones no care is taken to obtain anything like correct needle-track alignment, yet this point must be attended to or various troubles will occur in electrical reproduction. The construction of cheap gramophones will not usually permit of the fixing of a new tone arm of more modern type, which would enable the gramophone to be used with an ordinary sound-box or pick-up as desired. It is usually necessary, therefore, to purchase a pick-up already attached to a proper carrier arm.

It is not worth while to buy a pick-up alone to add to an existing gramophone unless the gramophone is a really good instrument with a reliable motor and so built that needle-tracking is accurate. If the instrument falls short in these essentials it is far better to purchase a complete playing-desk. Most of these units are as small and compact as a portable gramo-

The Radio-gramophone of To-day—

phone, and they can, of course, be obtained with a spring or an electrically driven motor as required. They are very convenient, as they can be placed on a table or near an armchair, thus enabling the user to change records without constantly getting up; for this reason the playing-desk may be described as the poor man's record-changer.

These instruments can be obtained in various different types. In some the lid

Ad-a-gram's radio-gramophone adaptor.

is hinged in the manner of an ordinary gramophone, whilst in others it is in the form of a pull-out drawer which can be pushed back into place as soon as the record is started in order to deaden the mechanical noise of the needle scratch.

It is advisable, of course, not to use extremely long pick-up leads, and the additional precaution of using screened leads is sometimes necessary. A great deal of nonsense is, however, talked about long pick-up leads by people whose knowledge is more theoretical than practical. In many cases where trouble is apparently caused by long leads the fault lies in bad receiver design. There is, in fact, nothing like a gramophone pick-up with leads of even moderate length for showing up inherent instability in a receiver.

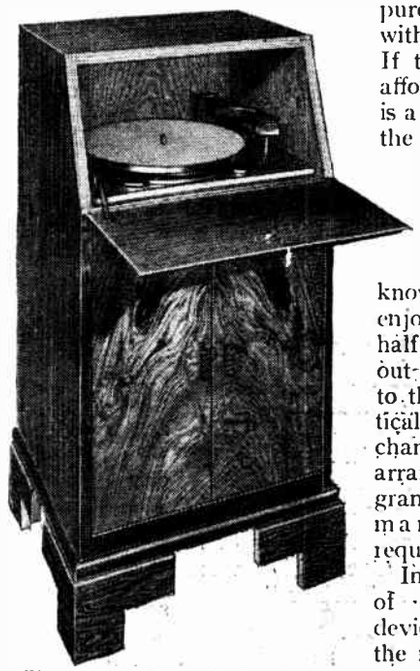
Apart from the portable type of playing-desk just discussed, there is another form which, for want of a better name, may be described as a console model. It usually consists of a record-filing cabinet built in console form with the playing-desk at the top. The intention is that the existing radio receiver with its built-in loud speaker be placed on the top so that the whole installation forms a complete radio-gramophone. Usually in this type of instrument the playing-desk is in the form of an actual bureau with the usual let-down flap, the whole arrangement being very practical. Others, no less convenient, have a built-in drawer, as in the portable type previously discussed.

Many people prefer this type of instrument to a complete radio-gramophone of the more conventional type, since the loud speaker output is at ear level, or slightly above, which is certainly more correct theoretically than the low-down position given by the ordinary instrument. In addition, ample space is given for record storage, which is not the case with the majority of instruments of the other type. This design of playing-desk can also be used with a console-type receiver, and the two pieces of apparatus would take up no more floor space than an ordinary radio-gramophone and its accompanying record cabinet.

Turntable, motor and pick-up are housed in a drawer in this Univolt Pedestal Unit, where provision for storing records is provided in the lower compartment.

Despite the merits of playing-desks, however, it cannot be seriously argued that the man who is starting *de novo* and has the necessary cash to spend on a radio-gramophone should purchase a receiver and playing-desk instead. The advantages of an instrument which has been specially designed for the function which it is intended to fulfil are too great to permit of their being outweighed by those of the playing-desk.

Considering the radio-gramophone from the gramophone side only, it must be remembered that the instrument can be purchased either with or without a record-changer. If the extra cost can be afforded a record-changer is a desirable adjunct, for the convenience is great in being able to select a complete programme and then retire to one's armchair with the knowledge that musical enjoyment can be had for half an hour or so without bothering to attend to the instrument. Practically all these automatic changing devices have an arrangement whereby the gramophone can be manually operated if required.



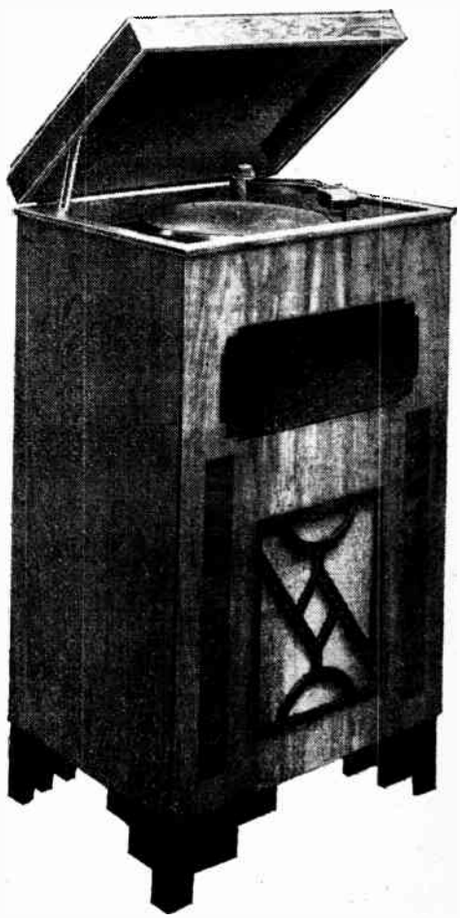
The "C.A.C." playing-desk incorporates an induction motor, pick-up and volume control.

Incidentally, the joys of a record-changing device are not denied to the man who, possessing a good set, becomes a radio-gramophone owner *via* the playing-desk route; at least one firm markets a complete turntable, record-changing device, and pick-up, all mounted on a unit plate for fixing by screws into a playing-desk cabinet or other convenient article of furniture.

There is now only the radio side of the instrument to be considered. (It may be taken for granted that the power output of these instruments is adequate and their tone beyond reproach). The point to be decided is what radio range is required.

Two or three years ago practically all radio-gramophones, while excellent as electrical reproducers of gramophone records, were woefully underpowered on the radio side and were suitable for the reception of nearby stations only. Nowadays one can purchase a radio-gramophone having any number of valves from two to ten, the multi-valve instruments embodying the superheterodyne principle and permitting the reception of practically any station having entertainment value. The choice of a radio-gramophone will be largely governed by the geographical position of the prospective purchaser, since this consideration will largely determine the degree of sensitivity and selectivity required.

Gramophone reproduction and wireless reception are now so closely associated in the minds of the public that it is almost amusing to recollect that when broadcasting began there was nearly a panic amongst record manufacturers lest broadcasting would eclipse their activities. Instead, we have seen interest in gramophone reproduction grow steadily side by side with the progress of broadcasting, and boom years in wireless and record sales have coincided.



The Peto-Scott "Adaptagram" cabinet provides liberal space for a receiver or amplifier and loud speaker equipment. A spring or electric motor can be provided to drive the turntable.

UNBIASED

By FREE GRID

Following the Music

I SUPPOSE that most of you, like myself, find an added interest in listening to a broadcast opera or symphony concert by following the musical score. Personally, I find that my enjoyment of gramophone record recitals is similarly increased by following the "score," which is easily done by twirling the appropriate gramophone record round on a pencil and looking at it through an ordinary reading glass. It is a little trick taught me many years ago by an old musician who often plays an organ solo from a gramophone record by propping up a small portable gramophone on the music stand and allowing the record to rotate.

The ability to read the score of a record in this way—which is quite as easily acquired as reading an ordinary musical score if you will only persevere sufficiently—will, I assure you, greatly add to your interest in gramophone recitals. It has, at any rate, taught me to appreciate at its full value the strenuous efforts made by the B.B.C. to make good the well-known musical deficiencies of a gramophone record by superimposing sound

Quite easily done.

from instruments played in other studios. Sometimes their efforts are so emphatic that I find a real difficulty in following the original score on the record.

Bright Ideas for 1934

ALTHOUGH it is not yet six months since the last Olympia Show, it is by no means too soon to begin thinking about what we expect the manufacturers to provide for us in next season's models. If any of you have got any bright ideas in this respect, please send them along and I will endeavour to give them publicity. Only in this way can we get the manufacturers to market the things we want.

As a start off, I think that no manufacturer's range of sets should be included among the 1934 models which does not make provision for at least three wavebands, namely, long, medium, and the most useful of the various short wavebands. Of course, we must expect the usual opposition. It will be pronounced technically impossible to produce such a set at an economic price, and the detrimental effects of switching will be pointed out to us; in short, the usual obstructionist methods will be employed, just as they were umpteen years ago when we demanded dual-waveband receivers.

The use of automatic record changers on radiogramophones must become more widespread. Furthermore, there must not be so great a discrepancy between the price of a console receiver and a radiogramophone.

If any manufacturer knows of any just impediment to the achievement of these worthy aims let him declare it.

"Enormous Sacrifice"

IT is unfortunate, but none the less true, that obsolete sets and components are foisted on to the public as new, even in the radio departments of certain of the large stores. I came across a typical instance of this sort the other day in one of our large departmental establishments.

I noticed an imposing-looking superhet of 1926 vintage, the makers of which have long since passed along Carey Street to merciful oblivion. Evidently it had not been used, as it was very spick and span; and since its makers had been a firm always noted for their cabinet work it was of quite prepossessing appearance even when compared with the modern instruments which surrounded it.

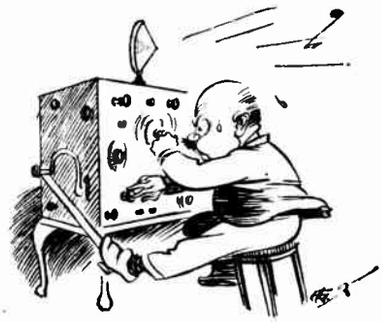
Its original price—which would make a nasty dent in a hundred-pound note—was marked on it, followed by the words, "Maker's current list price." After this came the sale price of £10, which was hailed as an "enormous sacrifice."

Adding rhythm to records.

I don't know what you think about this sort of thing, but, in my opinion, it is sheer dishonesty, and I said so in no uncertain terms to the manager.

With Knobs On

I HAVE received a long and involved letter from a reader who sighs for the days that are no more. His particular moan is the paucity of knobs on the modern set. In the good old days, when men were men and sets were sets, he points out, you had at the very least half a dozen knobs to twiddle exclusive of filament rheostats. He goes on to lament what he calls the "effeminacy" of the average set-owner of to-day, who is not satisfied even with only one main tuning control on his receiver but wants still greater simplicity.



With treadle-driven generator.

Personally, I profoundly disagree with my correspondent, and would gladly welcome the present tendency towards simplification of control. Why use six tuning dials when one will suffice, and why use filament rheostats when they are not wanted? I am greatly in favour with the modern vogue of combining the on-off switch with the volume-control knob, and cannot for the life of me see why the wave-band and gramophone-switching arrangements should not be combined with the tuning knob, as is done in the case of a certain highly efficient receiver. This reduces the number of knobs to two only. Three knobs is, I think, the outside limit in numbers; if more are permitted we might be lavish and fit our sets with such refinements as a treadle-generator to supply H.T. and L.T.

Why not?

Her Tiny Hand is Frozen

MY confidential secretary complains that her fingers are stiff with cold and the tips thereof absolutely numbed as the result of typing these few notes, for in spite of the fact that the room is pleasantly warm the typewriter keys are like icicles. Surely it is not beyond the ingenuity of our manufacturers to turn out a model with electrically heated keys? The actual amount of heat per key that would be required would be infinitesimal, and a miniature heating element built into each key would be all that would be required.

NEWS of the WEEK

Current Events in Brief Review

Listening in Iceland

ICELAND'S listeners have increased in number by 28 per cent. during the past year. The Reykjavik transmitter now has a local audience of 5,418.

Welcome to Athlone!

BY the time these lines are read the new 80 kW. broadcasting station of the Irish Free State at Athlone should have opened its regular service. The station has been experimenting nightly after 10.30 o'clock on its wavelength of 413 metres.

Open-air Wireless Mart

FOR a daily "rent" of 50 centimes, the amateurs of Lyons are permitted to sell old radio sets and parts in the Place Riviere, Villeurbaine. Apparatus can be found here displayed on trestles or the cold cobble stones. The place is said to be a popular haunt for all radio-minded folk.

More Radio Palaces

APPARENTLY the best is just good enough for broadcasting, to judge from the general tendency to provide palatial headquarters for broadcasting purposes. Two new "Broadcasting Houses" are to go up in Germany: at Cologne and Königsberg respectively.

Rebuilding Giant Studio

EUROPE'S biggest broadcast studio, in Berlin, is to be completed. This imposing hall in the Funkhaus seats 750 people in the lower auditorium alone and contains room for many more in the gallery and orchestra. When the Funkhaus was first erected the large studio was given temporary walls and decorations while acoustic experiments were carried out.

Imported Valves

THE Board of Trade give notice that they have referred to the Standing Committee an application for an Order-in-Council to require the marking with an indication of origin of imported wireless valves and rectifying valves.

Those who desire to be heard in opposition at the public enquiry which will be held later should communicate with the Secretary, Mr. E. W. Reardon, at the Board of Trade Offices, Great George Street, London, S.W.1, not later than February 25th, 1933.

The Television Society

"THE New Gas Discharge Tubes and their application to Television" is the title of a lecture to be given before the Television Society on Wednesday next, February 8th, by Mr. Norman L. Harris, of the G.E.C. Research Laboratories. The meeting will be held at 7.0 p.m. at University College, Gower Street, W.C.1.

Non-members may obtain cards of invitation on application to the Hon. Business Secretary, Mr. J. J. Denton, A.M.I.E.E., 25, Lisburne Road, Hampstead, N.W.3.

Electing an Announcer

NEARLY 12,000 listeners in Algiers have taken part in the election of a lady announcer. The position has been won by Mlle. Costes, who originally officiated at the same station and, later, at *Poste Parisien*.

Another Swiss Regional

SWITZERLAND'S third regional station—that intended for the Italian-speaking population—is nearing completion in the centre of the fortified region of the Monte Ceneri, in the canton of Tessin, with studios at Lugano. The ceremonial opening will take place in the early summer.

THE COMPLEAT POLICEMAN. The day draws near when every constable will be radio-equipped. (Above) A Brighton policeman with a motor cycle receiver. (Right) A Nottingham radio police car.

The Loudest Spot

LONDON may possess the honour or shame of being the world's noisiest city. Noise sleuths of the Western Electric Co. are now experimenting with their "sound meter" in various cities, filing the results at their Cricklewood Works, London.

The noisiest spot in London, according to last week's survey, was in Fleet Street, near *The Wireless World* offices, where the volume of sound measured 83 decibels. Lombard Street, in the financial quarter, and the Embankment were comparatively quiet, registering only 63 decibels.

In Switzerland

SWISS listeners numbered 231,000 on December 31st, 1932, an increase of 81,000 in twelve months.

Believe It or Not

OUR Paris correspondent reports that when, during the recent Anti-Interference Congress in the French capital, speakers were denouncing radio parasites in no uncertain terms, a local benefactor, misunderstanding the use of the term, sent an employée to the hall to distribute free packets of vermicide.

Tally Ho!

THE famous secret broadcasting station at Almelo, Holland, which sends out a nightly "good luck" message to the police who are trying to catch it, has not yet been run to earth. It is assumed that the station must be mobile, as no official direction finder seems to be able to locate it.

"Skip Distance" on 'Plane

STRINGENT requirements have been laid down in an order received by Messrs. Standard Telephones and Cables, Ltd., from the Belgian Air Force for fifty combined short-wave transmitters and receivers for use on Fairey "Firefly" fighting 'planes. The specification called for constant and reliable two-way telephonic communication on short waves, although the communicating machines and headquarters will often be only a few miles apart. "Skip distance" effect has had to be overcome, and this the company claims to have achieved.

Royal Warrant for H.M.V.

A FURTHER Royal honour has been bestowed on the Radio industry. The first Royal Warrant of the Prince of Wales for radio, records, and gramophones has been granted to The Gramophone Company, Ltd. Last month "His Master's Voice" were appointed official suppliers of radio apparatus to His Majesty the King.

Seen but Not Heard

"STRASBOURG — the station without a service area" might be an appropriate motto for the 11.5 kW. State broadcasting station in Alsace-Lorraine. According to a clamorous body of listeners Strasbourg cannot be heard even in the near neighbourhood of the transmitter owing to interference by foreigners.

Pigeons *versus* Wireless

IT may take the conceit out of radio engineers to learn that the Ontario Forest Patrol has decided not to depend entirely upon radio communication from its outlying posts. It is believed that under certain conditions pigeons will be far more efficient.

"The Accumulator"

A COURSE of six lectures on "The Accumulator" is to be given by Mr. R. W. Minter, A.I.E.E., on Wednesdays, at 6.30 p.m., at the Chelsea Polytechnic, Manresa Road, London, S.W.3, the first lecture being on February 15th next.

Full particulars can be obtained on application to the Principal.

Broadcasting via Light Beam

AN acid test for the photo-electric "eye" was carried out in New York on January 20th, when a woman singer's voice modulated a beam of light half a mile in length, extending from one New York skyscraper to another. The beam actuated a photo-electric cell which, in turn, modulated the broadcast carrier wave. The transmission was duplicated over the ordinary line, the engineers being able to switch from one to the other method without notifying listeners, who were unable to tell which method was being used at any given time.

Alternative Programmes in Japan

JAPANESE listeners are to enjoy alternative programmes in the near future, the Broadcasting Corporation of Japan having adopted a "regional" broadcasting plan on similar lines to that of the B.B.C.

New equipment for this purpose at the Osaka station consists of a Marconi Type P.A. broadcasting transmitter, of 10 kW. power, incorporating the most modern features of design, including the principle of low power modulation.

World's Oldest Broadcast Announcer?

HARRISON HOLLIWAY, manager of KFRC, San Francisco, claims to be the world's oldest broadcast announcer. Holliway built his own amateur station in 1919, and in November, 1920, at about the time that KDKA, the world's first regular broadcasting station, inaugurated its service, he began announcing over his station, 6IBN. He is still broadcasting, and claims that no one preceded him who is still a regular announcer.

"The Wireless World" Index and Binding Cases

THE index for Volume XXXI, July to December, 1932, is now ready, and may be obtained from the publishers at Dorset House, Tudor Street, London, E.C.4, price 4d., post free, or binding case, 3s. 1d., post free.

MODERN PRACTICE IN PICK-UP DESIGN

Constructional Details Contributing to Quality of Reproduction and Convenience in Use

THE early development of the gramophone pick-up proceeded along empirical lines, and it was not until 1927 that an attempt was made to develop a design from first principles. In that year a paper was published in America by Kellogg which laid the foundation of modern practice and established the "half-rocker" moving iron pick-up as the predominant type.

IN general principle the modern pick-up does not differ greatly from the first experimental models of five or six years ago. The "half-rocker" electromagnetic type still predominates, but its design is now established on a scientific basis, and closer attention is being paid to refinements, such as ease of needle changing, which contribute to the convenience of the user.

In this design a small armature is pivoted between U-shaped pole pieces attached to a horse-shoe permanent magnet. The needle vibrations cause the magnetic flux to traverse the armature first in one direction and then in the other as the tip of the armature approaches first the North and then the South pole of the magnet. Surrounding the armature is a coil of fine wire in which the fluctuating magnetic field induces an electromotive force that is finally amplified and passed on to the loud speaker. Although individual makes show apparently wide divergencies in treatment it will be found on close examination that in most cases the basic half-rocker principle has been adopted, since it offers the best solution of the problem of combining the qualities required to do justice to records produced by modern methods.

The Ideal Pick-up

Briefly these qualities can be summarised as follows:—

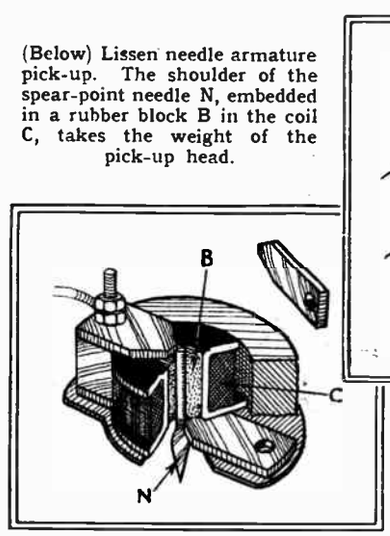
(1) Correct frequency response.
(2) Freedom from harmonic distortion.
(3) Freedom from record wear.
(4) Adequate output.
(5) Ease of needle changing.
(6) Mechanical silence.

It will be assumed that this is the relative order of importance.

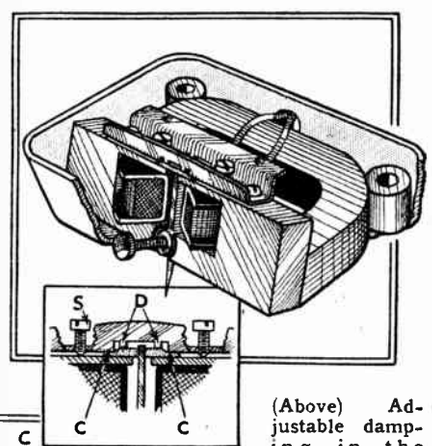
In dealing with the frequency response it goes without saying that the output should be free from sharp resonances. The earliest pick-ups suffered from a bad resonance in the middle register which was due to the fact that the armature was much too heavy. Consequently we find that the modern pick-up has the smallest possible armature, proportioned to give a low inertia. It has even been found possible to dispense with an armature as such, and to pass the magnetic flux through the needle itself. The Lissen needle armature pick-up is an example of this practice, which not only results in freedom from resonances but also gives a much improved response in the extreme upper register.

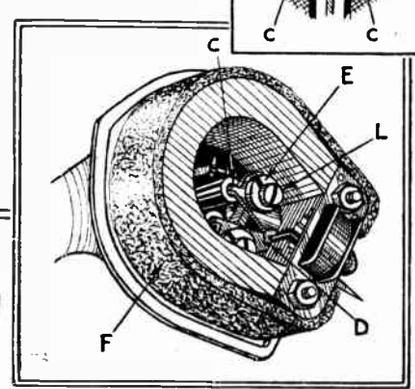
Judicious proportioning of the restoring force due to the rubber damping pads holding the armature in a central position between the pole pieces results in the armature resonance being raised to a frequency of the order of 3,500 to 4,500 cycles. Even so this resonance must not be too pronounced, otherwise needle scratch may become prominent. Trouble from this source is far more frequently due to a high-frequency resonance than to a response which extends too high into the upper register.

Having safely disposed of the armature resonance, the next step in determining the frequency characteristic is to ensure that the output in the lower register below 250 cycles shall increase progressively to compensate for the restriction in amplitude necessitated by the limitations of the pitch of the record groove. The simplest method, and one which has been most



(Below) Lissen needle armature pick-up. The shoulder of the spear-point needle N, embedded in a rubber block B in the coil C, takes the weight of the pick-up head.



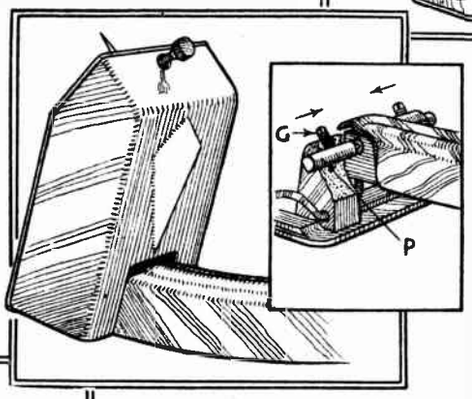


(Above) Adjustable damping in the Bowyer-Lowe Mark III pick-up. The rubber is clamped at C and the pressure of the damping contacts D is controlled by the set screws S.

(Left) Accurate centring of the armature and damping block D in the British Radiophone pick-up is ensured by pressure plates pivoted at C and adjusted by the cam E and locking screw L. Mechanical noise is reduced by the felt lining F.

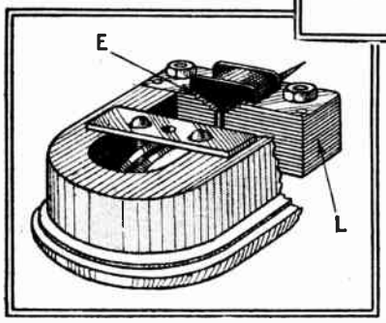
Modern Practice in Pick-up Design—

frequently used in the past, is to obtain this increased output by narrowing the air gap, so that as the amplitude increases towards the bass the armature is brought closer to the pole pieces and a correspondingly increased magnetic flux is obtained. With this method a perfectly satisfactory response curve is obtained, but the effect of introducing amplitude distortion to obtain a rising characteristic in the bass also has the effect of causing modulation of high frequencies by low. In addition, harmonics are introduced, since the peak of the wave is drawn out as the armature approaches the pole pieces.



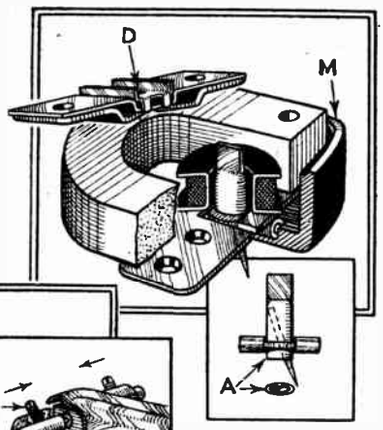
(Right) Side-play and the possibility of jarring is avoided in the hinged head of the B.T.H. de Luxe pick-up by adjustable sliding pivots P locked by grub screws G.

(Below) Leakage of magnetic flux is reduced and sensitivity increased in the Bulgin pick-up by assembling the laminated pole pieces L in echelon as shown at E.



Consequently, we find that in modern designs tone-arm resonance is rapidly displacing amplitude distortion as a means of boosting the low frequencies. The flexibility of the needle and armature assembly and the effective mass of the tone arm are so proportioned that the tone arm resonates about the needle point at some frequency in the neighbourhood of 50 cycles. When tone arm resonance is employed the air gap can be increased, since the rising characteristic is obtained by mechanical and not electrical means.

The methods employed in obtaining the correct frequency response and freedom from harmonic distortion must not, however, prejudice the performance of the pick-up from the point of view of record wear. This is primarily a matter of reducing the stiffness of the armature movement in relation to the mass of the pick-up head and tone arm, and the performance from the point of view of record wear can generally be judged by the freedom of movement of the needle when gently rocked between the fingers. Other factors affecting record wear are the pressure at the needle point and correct needle track alignment. A weight of approximately 5 ozs. is generally accepted as giving the correct pressure at the needle point. If it is much lighter than this there is a tendency for the needle to jump the groove



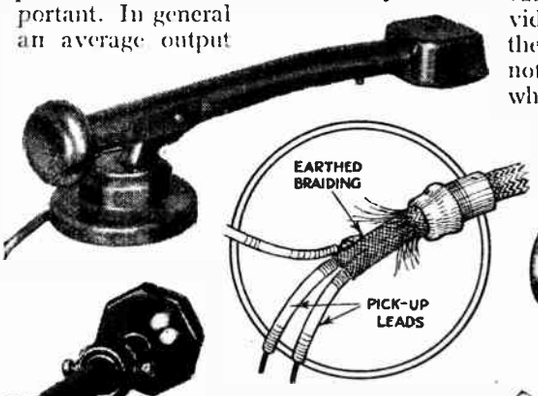
(Above) Section of the Limit "Reliance" pick-up. The case M is specially moulded to locate the armature pivot while the top pole-pieces and damping clamp D are assembled as an integral unit. The oval section of the hollow armature needle carrier is shown at A.

during loud passages, while a heavier pressure may tend to abrade the surface of the record. Needle track alignment has been carefully studied, and it has been found that the simple expedient of setting the pick-up head at a predetermined angle to the tone arm axis gives correct tangential needle alignment within 1 or 2 per cent. at any point of the record. Sensitivity is important. In general an average output between 0.5 and 1 volt R.M.S. may be regarded as satisfactory. To maintain this output while keeping the air gap wide to reduce harmonic distortion is not always an easy matter; but improvements in magnet steels have greatly simplified the task of the designer. High permeability nickel-iron alloys are also being used for the armature in many modern designs with promising results, while conservation of the permanent magnet flux by reducing leakage also helps greatly in obtaining increased efficiency.

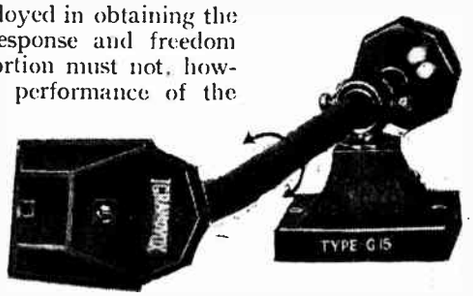
The foregoing covers most of the essential factors governing the design from the electrical standpoint. There are, however, numerous opportunities for introducing refinements which contribute to the convenience of the user. Where a swivelling head is provided to facilitate needle changing it is important that the joint should be free from rattle. The time required to change a needle is greatly reduced in the Limit "Reliance" pick-up. No grub screw is provided and the needle is wedged diagonally in the hollow armature which is of elliptical cross-section. Experience shows that this method is entirely satisfactory, and that the weight of the pick-up head is sufficient to prevent the needle turning during the playing of a record.

A wide angle of lift in the British Clarion pick-up gives accessibility for needle changing with a rigid tone arm assembly.

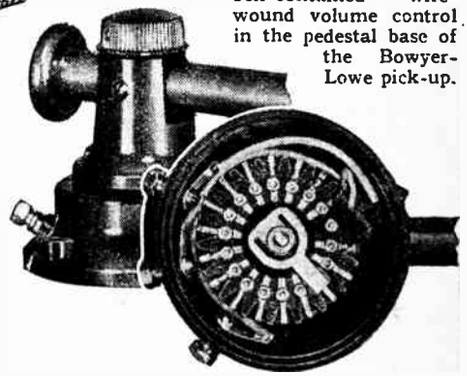
Freedom from extraneous induction from the gramophone motor is given attention in most modern designs. If the tone arm is of metal this is generally earthed, a separate terminal being provided for the purpose. Finally, there is the question of mechanical silence. It is not an unusual experience to find that where a pick-up is used on an open turntable, the noise emitted by the pick-up—particularly at high frequencies—exceeds that reproduced from the loud speaker. This trouble is overcome by cushioning the pick-up movement inside the head by rubber or felt lining.



(Above) Screened leads in the Marconiphone pick-up prevent induction interference from the gramophone motor.



(Left) To facilitate needle changing the tone arm in the Igranic pick-up rotates as a whole.



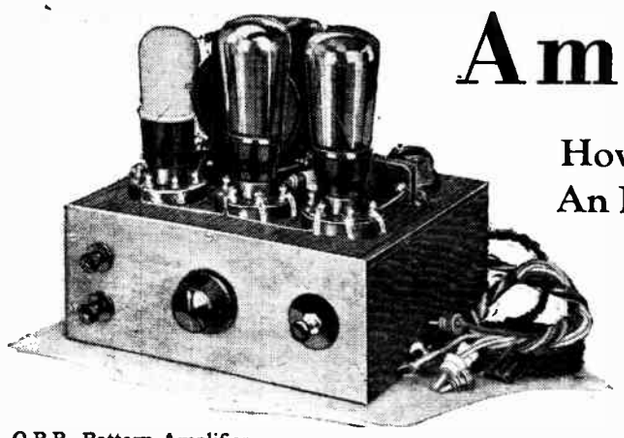
Self-contained wire-wound volume control in the pedestal base of the Bowyer-Lowe pick-up.

In conclusion, it can safely be said that the design of the modern pick-up has kept pace with recording and amplifying technique.

Amplifier Designs

How to Make Two Gramophone Amplifiers. An Economical Battery-fed Unit, and a Model for D.C. Mains Supply

By H. B. DENT



Q.P.P. Battery Amplifier.

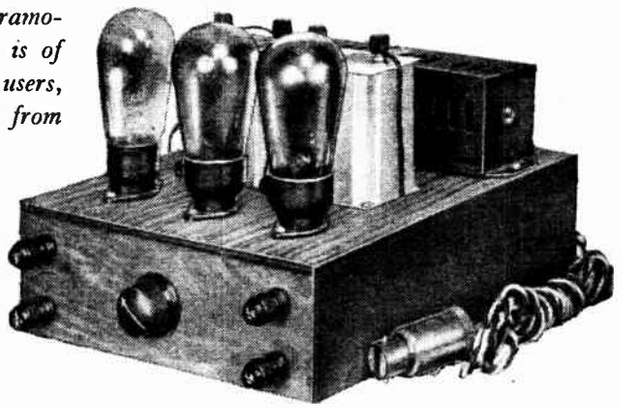
WITH the advent of quiescent push-pull for the battery user and an increase in range of indirectly heated D.C. valves, the A.C. user is not alone in being able to secure satisfactory amplification of gramophone records. This article is of special value to all D.C. users, whether current is derived from batteries or the mains.

THE electrical reproduction of gramophone records is by no means a new subject; indeed, it is now so commonplace that designers of modern mains receivers endeavour wherever possible to include this facility. The most recent development in low-frequency amplification, whereby two small pentodes are operated in a manner described as quiescent push-pull, enables the battery user to obtain a large power output at small cost, for it is possible now to build an amplifier giving some 1,300 milliwatts output yet demanding on the average but 7.5 mA. from the H.T. battery. Thus, the smallest size will suffice, and operating costs are, of course, comparatively low. For the purpose of this article quiescent push-pull will henceforth be referred to as Q.P.P., a descriptive and convenient abbreviation that is being adopted, and may be more widely used in the future.

Q.P.P. Battery Amplifier

It is this system that is embodied in the battery gramophone amplifier to be described here, and which forms one of the units in the illustrations. From the circuit diagram it will be seen that the amplifier includes two stages, coupled by a high-ratio push-pull transformer. In the first stage is a medium-impedance valve—such as the Cossor 210 HF, for example—which when biased to minus 1.5 volts passes about 1.5 mA. under working conditions.

The input to its grid is controlled by a 50,000-ohm potentiometer, this being a very convenient size, and, moreover, will suffice for most gramophone pick-ups in general use. Where, however, the makers specify a higher value for the volume control it would be best to observe their recommendations. The anode circuit of this valve is decoupled by a 20,000-ohm resistor and a 2 mfd. condenser. Incidentally, it has since transpired that the decoupling condenser C1 could be turned through a right angle and fixed to the underside of the baseboard if one of slightly smaller width, such as the Wego type ALU, the T.C.C. type 65, or the Dubilier BB model, were used.

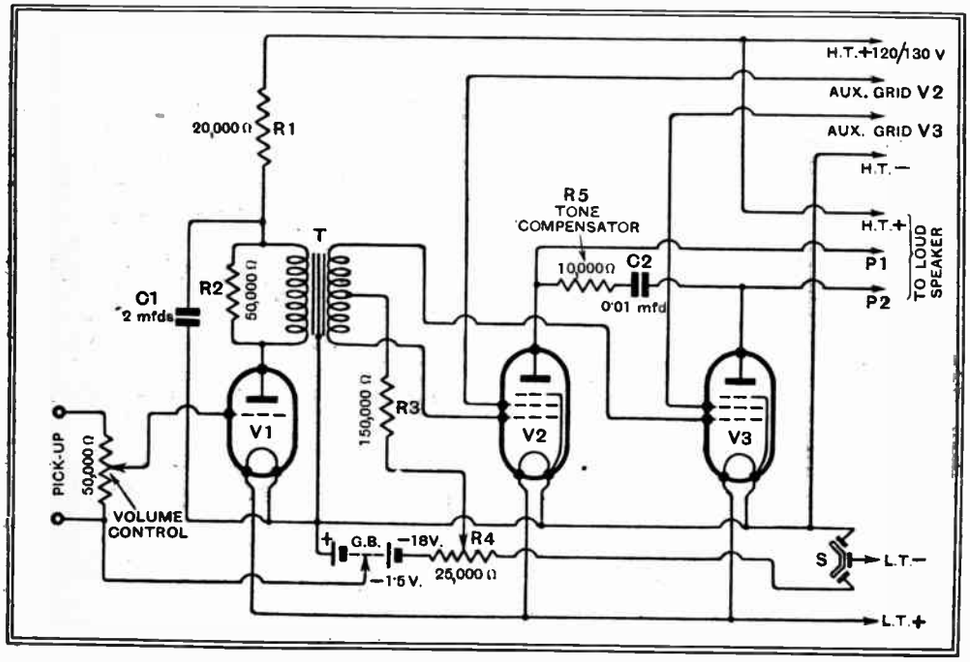


D.C. Gramo-Amplifier with two pentodes in parallel.

In the output stage are two Mazda Pen. 220A valves arranged as described in the article "Outstanding Battery Set Development," and more recently in the "Quiescent Push-pull Two" receiver, so that as the reader must by now be quite familiar with its particular technical features we will not further enumerate them here but give our attention to a discussion of the constructional work and the practical operation of the amplifier.

The components are assembled on a plain box-type base built up from plywood to the dimensions shown in the drawings. On the panel are mounted the volume control, on-off switch, and the pick-up terminals. The valve holders, L.F. transformer, and tone compensating components are assembled on top of the baseboard, while the underneath space is utilised to accommodate the grid bias batteries, decoupling components, and the bulk of the wiring.

The grid bias potentiometer, which is located in the back right-hand corner of the baseboard, serves a dual purpose; it enables critical adjustment to be made of the bias voltage for the pentodes and also imposes a load on these batteries with a view to slowly reducing the grid bias in sympathy with the fall in H.T. battery

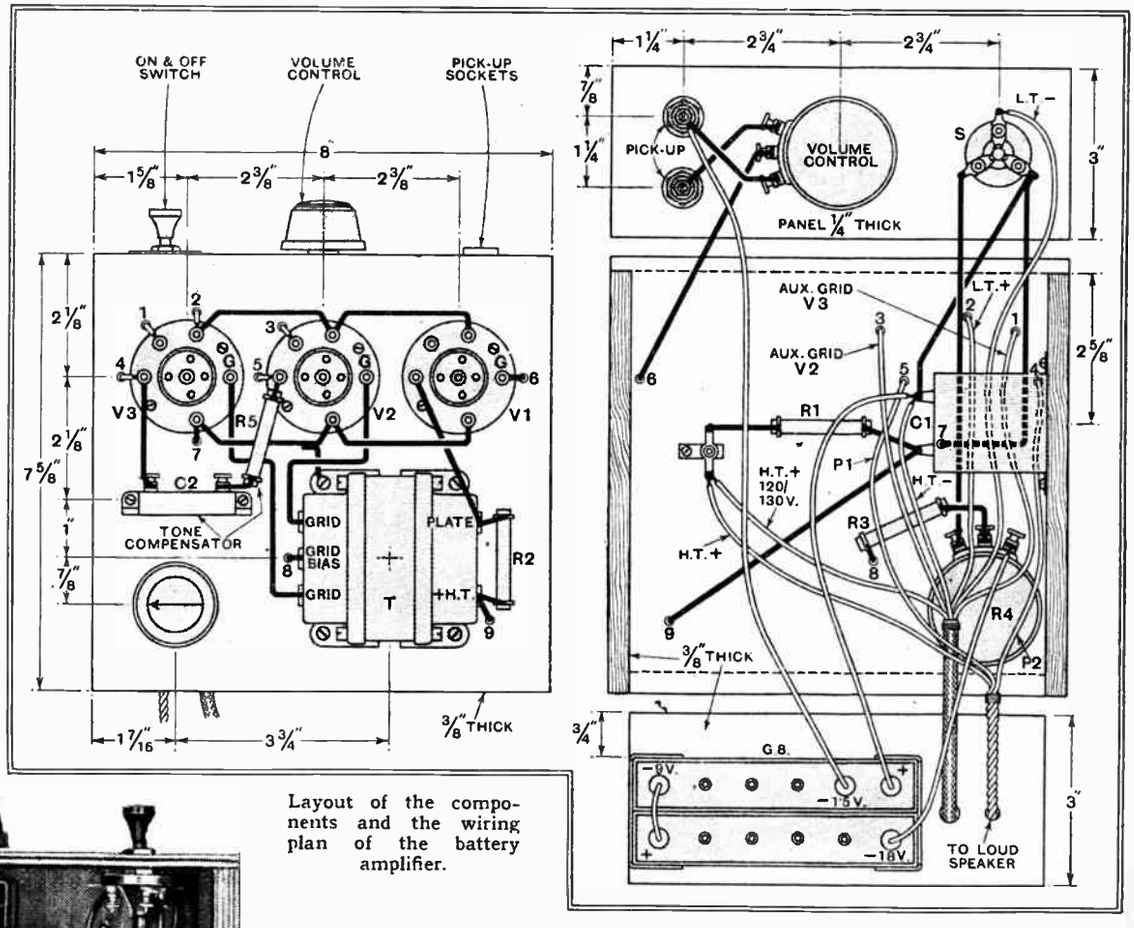


Theoretical circuit diagram of the battery amplifier. Valve V1 is a Cossor 210 HF and V2 and V3 Mazda Pen. 220A.

Amplifier Designs—

volts, and thereby avoiding constant checking of the matching of the two output valves. This is achieved in the first place by adjustment of the auxiliary grid voltage, of which more anon. It requires, however, that each pentode auxiliary grid must have a separate H.T. lead so that a six-way battery cable is necessary to convey the various H.T. and L.T. voltages to their respective points. In addition, three other leads are brought out from the amplifier. These join to the loud speaker *via* the special Q.P.P. transformer, such as that fitted to the Celestion P.P.M10 model moving-coil loud speaker, which, incidentally, was used during the initial tests of the amplifier. This has three terminals marked P1, P2, and H.T.+ respectively, and on the diagram and wiring plan the leads that join to these terminals are marked accordingly.

The only other matter in connection with the wiring that needs attention is in connection with the filament circuit. The valve holders must be wired so that the pin marked 3 on the base of the pentodes join to the negative of the L.T. battery.



Layout of the components and the wiring plan of the battery amplifier.

Underside view of the Q.P.P. amplifier showing the position of the grid batteries.

Before the amplifier is put into use the two pentodes must be carefully matched. The process, however, is quite simple and entails nothing more than adjusting their respective auxiliary grid voltages so that the anode current is the same for each valve. A milliammeter taking 5 mA. for a full-scale deflection would be suitable for this purpose, as the current will not exceed 2 mA. It need not be a high-grade instrument, and one of the moving-iron type will serve. At this stage it might be as well to check over again the connections to the grid batteries to ensure that these are correct. If arranged according to the drawings the output valves will receive the maximum bias, i.e., minus 18 volts, when the knob of the 25,000-ohm potentiometer is turned as far as it will go in a clock-wise direction. The working position is about one-sixth of a turn off maximum, but its actual setting is a matter for trial, as will be explained later.

One other item of the equipment that is non-standard is the H.T. battery. Owing to the fact that the pentode auxiliary grids require fairly critical adjustment of voltage a special Drydex battery has been evolved for use with sets and amplifiers embodying the Q.P.P. output stage. This is a 130½-volt unit of standard capacity size and it is provided with seven tappings at 1½-volt intervals from 120 volts onwards.

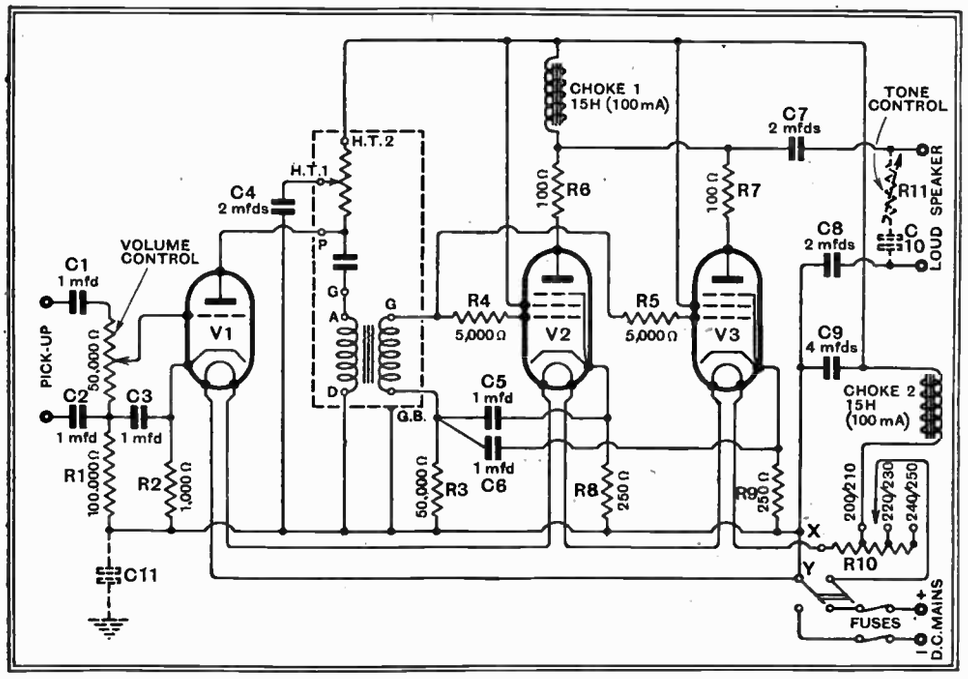
The milliammeter is connected in the main H.T. positive lead to the 130½-volt tapping, and one of the pentodes inserted in position. The auxiliary grid H.T. supply lead for this valve is then plugged into the various intermediate H.T. sockets in turn until a position is found that gives a reading of 2 mA. approximately on the anode milliammeter. Should this not be possible, then a slight adjustment can be made to the grid bias potentiometer and the process repeated.

This valve is then removed and the remaining pentode inserted in the other valve holder. The auxiliary grid voltage of this valve is then adjusted so that the milliammeter reads the same as in the case of the other valve, *but the grid bias voltage must not be altered*. Should it be impossible to obtain a perfect balance then a slight readjustment may be made to the grid bias potentiometer, but the important point to remember is that both valves be matched finally with the *same bias*.

Three-quarter plan view of battery model. In the lower right-hand corner is the control knob of the grid bias potentiometer.

Amplifier Designs—

When the valves have been matched the milliammeter must be removed from the H.T. supply lead when the remaining valve can be placed in position and the amplifier given its first practical test.

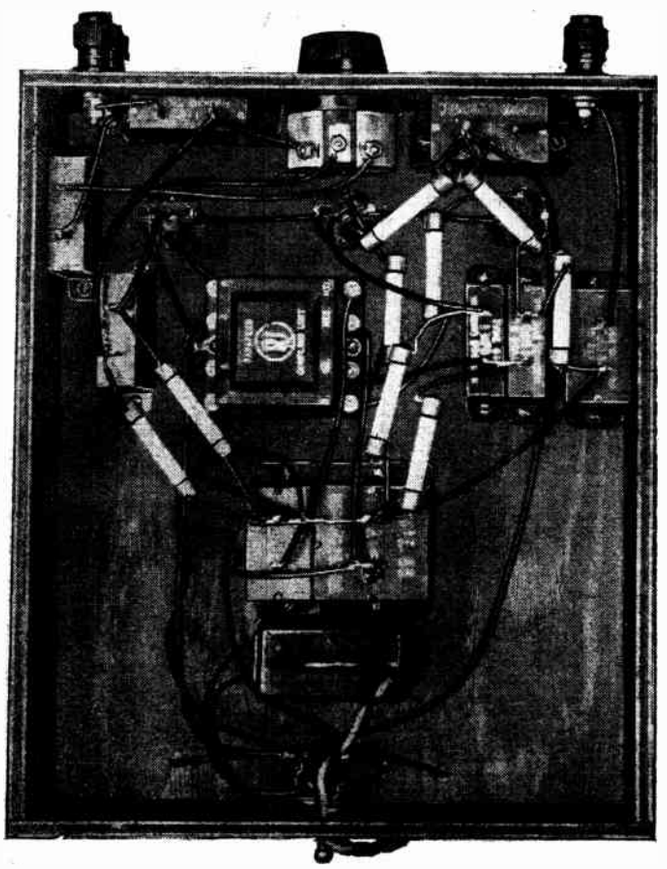


Circuit diagram of the D.C. mains amplifier. The components enclosed by a dotted line are contained in the R.I. coupling unit. Valves are, V1 Marconi or Osram D.H. V2 and V3 Marconi or Osram D.P.T.

D.C. Gramo-Amplifier

In view of the improved efficiency of the latest types of indirectly heated D.C. valves sufficient amplification can now be obtained with a two-stage amplifier, in which transformer coupling is used, to comply with all normal requirements. Furthermore, it has the distinct advantage that there is little likelihood of encountering L.F. instability and kindred troubles if the usual precautions are observed. Complete decoupling and such safeguards as the inclusion of anti-parasitic resistances in the grids and anode circuits of the two output valves are, nevertheless, essential to ensure absolute immunity from the troubles so often met with in amplifiers of this type.

The use of two pentodes in the output stage, with their grid and anode circuits joined in parallel is, admittedly, a refinement, but experiments have shown that one valve only is hardly sufficient to give a large power output under all conditions. The potential on the anode of the output valve will rarely exceed 160 volts or so, since from the available D.C. supply has to be deducted the volts lost in smoothing, by grid bias and in the output choke, so that the valve is not working anywhere near its maximum efficiency.



This view of the D.C. model shows the numerous small components accommodated below the baseboard.

It will be seen from the circuit diagram of this unit that particular care is taken to isolate completely the gramophone pick-up and the loud speaker from the supply mains; one-mfd. condensers suffice in the case of the pick-up circuit, but two-mfd. condensers are employed in the output circuit. If further protection is desired the unit can be fitted in a small cabinet, but it must be borne in mind that the valves dissipate a fair amount of heat, and adequate ventilation should be provided.

Although it has not been found necessary to earth the amplifier to suppress hum

LISTS OF PARTS.

After the particular make of component used in the original model, suitable alternative products are given in some instances.

Q.P.P. BATTERY AMPLIFIER

3 5-pin Valve holders W.B. type "A.C." (Benjamin, Ferranti, Junit, Lotus, Wearite)

1 Push-pull L.F. transformer, 1:7 **Ferranti AF6c** (Multitone 1:9 ratio, R.I. model DY34, Sound Sales 1:9 ratio, Varley)

1 Resistance, 10,000 ohms, 1 watt, **R5** **Erie**
1 Resistance, 20,000 ohms, 1 watt, **R1** **Erie**
1 Resistance, 50,000 ohms, 1 watt, **R2** **Erie**
1 Resistance, 150,000 ohms, 1 watt, **R3** **Erie** (Dubilier, Claude Lyons)

1 Fixed condenser, 0.01 mfd. mica, **C2** **Graham Farish** (Dubilier, T.C.C., Telsen)

1 Fixed condenser, 2 mfd., 700 v. D.C. test, **C1** **Wego**

1 Volume control, 25,000 ohms, **R4** **Igranic No. 2235/7**
1 Volume control, 50,000 ohms **Igranic No. 2235/8** (Colvern, Lewcos, Rotorohm, Varley, Watmel, Wearite)

1 3-point Switch **Goltone R26/745** (Junit, Telsen, W.B.)

2 Grid bias batteries, 9 volt
1 pair Grid bias battery clips **Bulgin No. 7**

2 Insulated terminals **Clix "All-in"** (Belling-Lee, Burton, Eelex, Igranic)

1 6-way Battery cable, 30in. **Goltone "Court" R40/16** (Belling-Lee, Bulgin, Harbros, Lewcos)

5 Wander plugs **Clix "Master" type "B"** (Belling-Lee, Eelex)

Wood, Systoflex, small quantity 20 tinned copper wire, etc. Wood baseboard, 7½ x 8 x ⅝in.

Screws: 5 ¼in. No. 4 R/hd.; 4 ⅜in. No. 6 R/hd.; 6 ⅜in. No. 4 R/hd.; 5 ½in. No. 4 C/sk.

Valves: 2 Mazda Pen 220A, 1 Cossor 210 HF, or Mazda HL210, or Marconi HL2 or Osram HL2, or Mullard PM1HL.

D.C. GRAMO-AMPLIFIER

3 5-pin Valve holders, chassis mounting type **Bulgin VH7** (Clix, Eddystone, W.B.)

2 Chokes, 15 henrys, 100 milliamps **Bulgin LF21** (Ferranti B1, Igranic C80, R.I. 28/14 henrys)

1 Mains resistance, R10 **Bulgin MR5**

1 Volume control, 50,000 ohms **Colvern type ST10** (Igranic, Lewcos, Rotorohm, Varley, Watmel, Wearite)

5 Fixed condensers, 1 mfd., **C1, C2, C3, C5, C6**, 250 v. D.C. working **T.C.C. type 65**

3 Fixed condensers, 2 mfd., **C4, C7, C8**, 250 v. D.C. working **T.C.C. type 65**

1 Fixed condenser, 4 mfd., **C9**, 250 v. D.C. working (Dubilier type BB, Goltone, Wego) **T.C.C. type 65**

1 L.F. coupling unit **R.I. "Parafeed"** (Bulgin "Transcoupler")

1 2-pole mains switch **Bulgin S88** (Claude Lyons)

2 Metallised resistances, 100 ohms, **R6, R7**, 1 watt **Dubilier**

2 Metallised resistances, 250 ohms, **R8, R9**, 1 watt **Dubilier**

1 Metallised resistance, 1,000 ohms, **R2**, 1 watt **Dubilier**

2 Metallised resistances, 5,000 ohms, **R4, R5**, 1 watt **Dubilier**

1 Metallised resistance, 50,000 ohms, **R3**, 1 watt **Dubilier**

1 Metallised resistance, 100,000 ohms, **R1**, 1 watt **Dubilier** (Erie, Claude Lyons)

1 Twin safety fuseholder with 1 amp. fuses (Bulgin F11) **Belling-Lee No. 1033**

4 Ebonite shrouded terminals **Belling-Lee type "B"** (Burton, Clix, Eelex, Igranic)

1 Adaptor **Goltone R80/90**

Wood, Systoflex, small quantity 20 tinned copper wire, flex, etc. Wood baseboard, 11½ x 9½ x ⅝in.

Screws: 26 ¼in. No. 4 R/hd.; 10 ⅜in. No. 4 R/hd.; 2 ⅝in. No. 4 R/hd.

Valves: 1 DH, 2 DPT (Osram) **Marconi**

Amplifier Designs—

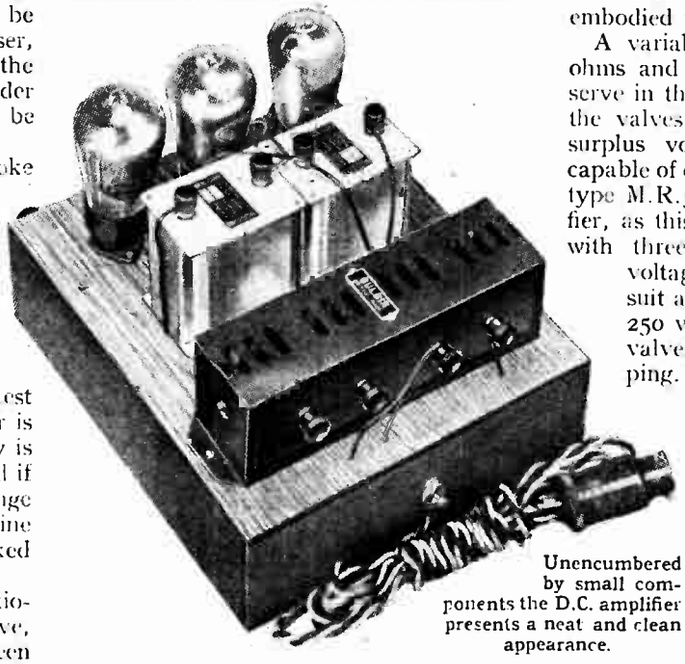
there is the possibility that on certain supply systems this might be desirable, in which case the earth connection should be made *via* a one- or two-mfd. condenser, and can be arranged as shown by the dotted lines in the circuit diagram. Under no condition should the amplifier be earthed direct.

The position of the smoothing choke Ch2 is based on the assumption that the negative conductor of the supply main is at earth potential, but this will not necessarily be so in every case.

Now the smoothing choke must be connected in the "live" main to be effective, but it is not proposed here to suggest that the constructor should test his mains to ascertain which conductor is earthed. The easiest and simplest way is to assemble the amplifier as shown, and if mains hum is at all pronounced to change over the smoothing choke to the other line and insert it between the points marked X and Y.

Volume is controlled by a potentiometer in the grid circuit of the first valve, and although one of 50,000 ohms has been fitted, its value really depends on the type of pick-up employed, as explained in the earlier part of this article. No provision is made in the design for a tone control, but if one is deemed necessary it can be joined across the output terminals as shown in dotted lines in the diagram, or embodied in the loud speaker.

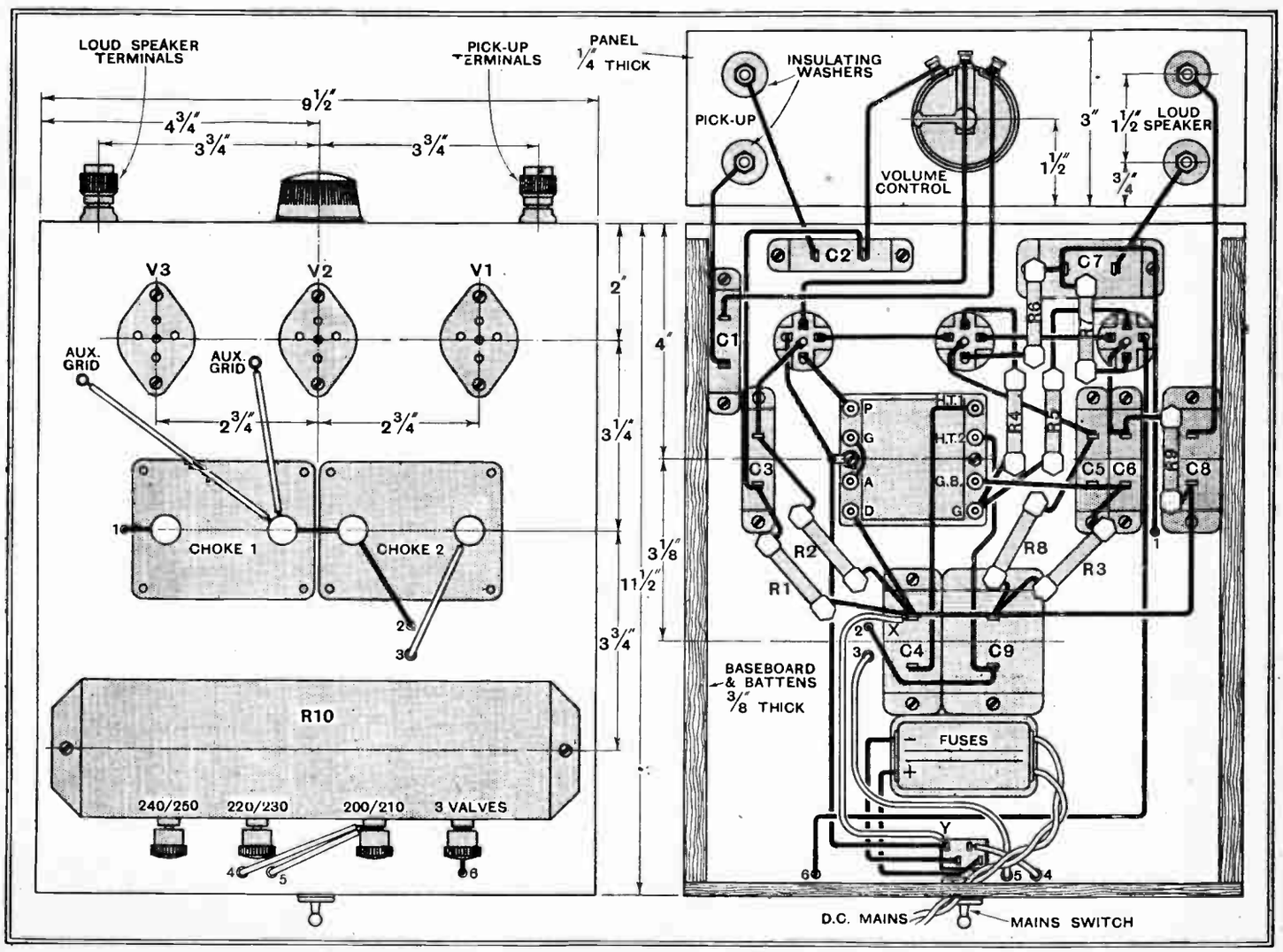
Specimen equipments are available for inspection at 116-117, Fleet Street, London, E.C.4.



Unencumbered by small components the D.C. amplifier presents a neat and clean appearance.

A variable resistance of about 25,000 ohms and a 0.05 mfd. condenser would serve in the present case. The heaters of the valves are joined in series, and the surplus volts dropped by a resistance capable of carrying 0.25 amp. The Bulgin type M.R.5 is used in the present amplifier, as this model is intended to be used with three valves only. It has three voltage adjusting tappings and will suit all supply mains between 200 to 250 volts. The H.T. supply for the valves is taken from the 200-volt tapping. Separate grid bias resistances are fitted in the cathode lead of each valve, which, so far as the output stage is concerned, ensures that in the event of one valve failing the other will not be damaged and will receive adequate bias.

The constructional work should not present any difficulties, as it entails little more than building a box-type base, assembling the components, and wiring.



Disposition of the components and wiring diagram of the D.C. amplifier. The mains voltage adjustment lead passes through the hole identified by the numeral four.

Amplifier Designs—

The pick-up and the loud speaker should be well insulated from the wood, either by fitting ebonite washers on each side and drilling large clearance holes in the panel for the metal shanks, or by employing completely insulated models, as in the case of the battery amplifier.

The R.I. Parafeed Coupling Unit may be connected in a number of different ways, but the one adopted here, and shown in the wiring plan, is the best for our purpose, since it joins the sundry component parts inside the case to give a straightforward parallel-fed transformer having a 1 to 3 step-up ratio. Alternative connections affording a higher ratio and making use of the auto-transformer coupling are not advised, since they vitiate the grid decoupling of the output stage as arranged at present.

Anode Decoupling

One section of the resistance in the R.I. Unit is employed to decouple the anode circuit of the first valve, and a two-mfd. condenser is joined between the H.T.1 terminal and the negative line. This capacity will suffice, as a rule, but it is just possible that if the D.H. valve used is slightly above the average in efficiency an additional two-mfd. condenser in parallel with C_4 may be necessary to decouple this stage completely.

To avoid confusion in following the wiring diagram it was decided to omit all the "earthing" wires joining the metal cases of the various condensers to the negative line. This must be done, and the most convenient way is to remove the paint from one fixing lug on each condenser and loop a wire under the head of the fixing screw and join it to the nearest point on the negative line.

The majority of loud speakers include an input transformer, and it is customary to provide a few tappings so that the correct matching between speaker and output stage can be ensured. The two pentodes will give the best results when working into a 4,000-ohm load, but it will not be necessary to obtain a special transformer as this falls within the latitude allowed on the standard models.

AN A.C. POWER AMPLIFIER

Constructional details of a 25-watt gramophone amplifier for A.C. mains, built as a self-contained unit with electric motor and pick-up, will be given in the issue dated February 17th.

CORRESPONDENCE

American Broadcast Reception

I AM extremely interested in the experiences of "Experimental Station G6LI" as set forth in your Correspondence columns.

I beg to endorse their statements and desire to associate myself with the sentiments expressed, in connection with "medium-wave" transatlantic reception.

Conditions permitting, my average nightly "bag" is thirty New World stations, 25 per cent. of which are of definite entertainment value after 3 a.m. K.P.O. (California), on approximately 442 metres, is very erratic even on the best of mornings, although, at times, it comes in with great strength. South American stations are strong and consistent just now, but broadcast very little of general interest.

I am fully in accordance with the view expressed regarding the superiority of a well-designed and *correctly ganged* "super-het." I should like to mention, for the benefit of other radio enthusiasts, that it is absolutely unnecessary to possess L.F. power valves dissipating enough watts to run a small power-station in order to receive trans-atlantic stations.

I also desire to express my curiosity regarding the future problem of station separation. Even now several European stations are subject to "American" interference, quite early in the evening.

In conclusion, I wish to register a protest at the serious morse interference on the "broadcast bands." Having kept a lengthy record of the ships and land stations concerned, I definitely attribute most of the interference to land stations; and therefore consider that it is up to the B.B.C., incidentally the Post Office, who collect our "ten bobs" to give the matter their earnest consideration.

"ZETA."

Liverpool.

Electrical Interference

"Free Grid's" remarks in the January 13th issue of *The Wireless World* with reference to the trolley-bus nuisance have interested us. Without exaggeration, it can be safely said that the present state of affairs has lost us the sale of hundreds of radio receivers. This you must admit can be taken as a very good indication with regard to the extent of the trouble. Although we have large show-rooms, it is quite impossible to demonstrate a set, just because our premises are situated on the trolley-bus route.

Naturally, the local W.R.A. has taken the matter up with the P.O. and Corporation officials and meetings were arranged. The outcome of the situation was a deadlock. The Corporation were not prepared to finance anything; furthermore, by their own report, there was no apparatus that would effectively cut the disturbance out.

A. ADCOCK,

For the Ipswich Wireless Co., Ltd.

DISTANT RECEPTION NOTES

QUITE a number of new high-powered stations will shortly be conducting their initial tests within the limits of the medium waveband. At the recent Madrid Conference it was decided that on the medium waves power should be limited to 100 kilowatts, though 150 kilowatts might be used on the long waves. Certain exceptions, however, were made amongst existing and projected medium-wave stations. The new Berlin Witzleben transmitter, for instance, is designed for 120 kilowatts. It is anticipated that it will be in full operation by the beginning of the spring.

Vienna's new giant is nearing completion at Bisamberg, which, like Brookmans Park, is situated a dozen miles or so outside the city itself. This plant will also include a transmitter capable of 120 kilowatts when required. Tests are likely to begin in March or April and full working may be expected a few weeks later.

Forty Programmes for All?

Not to be outdone, the Hungarian authorities are erecting a 120-kilowatt transmitter near Budapest in addition to a system of relays which should enable the whole country to be covered.

Both of the Brussels stations will be up to 75 kilowatts this year, and Rennes will be transmitting with an output rating of at least 60 kilowatts. Other stations which will join the super-power class—most of them with ratings probably between 60 and 75 kW.—are Hamburg, Belgrade and Bucharest. The time is in fact not far distant when every available channel, with the exception of those devoted to common waves between 300 and 550 metres will be occupied by a station with a power rating of from 25 to 120 kilowatts. Provided that the selectivity of the receiving apparatus is adequate this should mean that listeners will have a choice of thirty or forty programmes within the limits of the medium waveband alone.

The only fly in the ointment is sideband splash, against which knife-edge selectivity is of no avail. It is to be hoped that at the forthcoming Prague Conference an agreement may be reached to limit strictly the permissible depth of modulation for speech transmissions, for the trouble is mainly caused by the use of very deep modulation or even over-modulation during such transmissions.

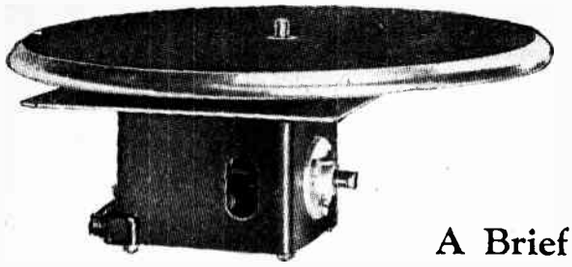
Best American Wavelengths

At the moment the reception of American stations is by no means so good as it was at the end of last year. There are, in fact, nights when hardly a whisper can be heard from transmitters on the other side of the Atlantic. These, though, are fortunately rare, and old friends such as WJSV, WCAU, WBZ, WHAM, WTIC, WENR and WPG seldom disappoint. Those who intend to burn the midnight oil will do well to remember that, as a general rule, the best stations are those with wavelengths between 200 and a little over 300 metres. If I were asked to select the most profitable of all parts of the waveband for American stations I would choose a belt a little above and below 270 metres.

Of European stations the best upon the long waves just now are unquestionably Zeesen and Radio-Paris. Warsaw is much less interfered with than it was by the Eiffel Tower and comes through as a rule with splendid quality and strength.

I would pick Katowice as one of the best medium-wave stations. It must, I am sure, be using more than its rated power output of 16 kilowatts. Listeners, though, may have some difficulty in receiving this station when Athlone comes into full service. Other stations that I can strongly recommend to the attention of listeners are Rome, Stockholm, Brussels No. 1, Munich, Budapest, the Poste Parisien, Leipzig, Frankfurt, Turin and Magyarovar.

D. EXER.



Harlie "Midget" high-speed induction motor.

Types of GRAMOPHONE MOTOR

A Brief Guide to the Salient Features of Modern Designs

THE electric gramophone motor has been developed to a high state of perfection, and it is safe to say that any of the leading makes can be bought with the assurance that the performance from the point of view of cool running, adequate torque, and reliability will leave nothing to be desired. There are, however, several distinct principles of operation in current use, and it may therefore be profitable briefly to run through the salient features of each type in order that a prospective purchaser may choose the one best suited to his individual requirements.

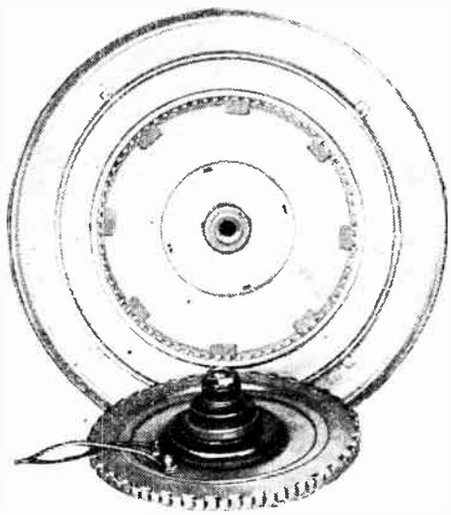
Where D.C. mains are available the choice is limited to the "universal" or commutator type of motor. This motor works either on A.C. or D.C. mains and is governor-controlled. It may be of the high-speed geared type or of the slow-speed type in which the rotor runs at turntable speed. The latter principle is conducive to long life and is specially suitable for continuous service in restaurants, dance halls, etc

If alternating current supply mains are available the range of choice is wider. One of the most popular types is the induction motor, which depends for its action upon the setting up of eddy currents in a plain metal rotor. Here, again, we have both high- and low-speed types, the former employing a small geared motor with a cylindrical rotor and the latter a large-diameter disc running at turntable speed. With the eddy current principle of drive the speed would tend to increase indefinitely, so that governor control is necessary. This is an advantage where records requiring slight differences of speed for standard pitch are to be played.

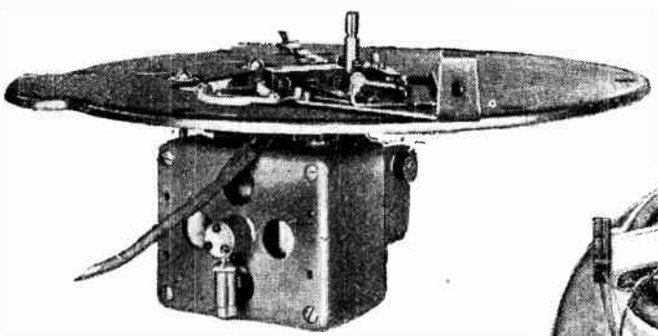
In the synchronous motor we have the simplest and cheapest type of A.C. motor. No governor is required, and the number of poles is fixed to give the standard turntable speed of 78 r.p.m. on a 50-cycle supply. It is necessary to start the turntable by hand, but the knack of hitting-off the synchronous speed is soon acquired. A shock-absorber is usually incorporated to smooth out any roughness due to the 50-cycle impulses.

The advantages of constant speed are also to be found in the self-starting synchronous A.C. motors which have recently made their appearance. The rotor is designed to operate both on the induction and synchronous principles. On first switching on the current the motor functions on the induction principle and its speed increases until the correct turntable speed is reached, when the motor falls into step with the 50-cycles supply. The synchronous force is made sufficiently strong to hold the motor speed constant against the induction effort which would otherwise tend to make speed increase.

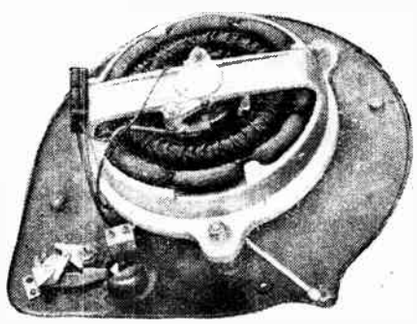
To sum up, the universal commutator motor is the only type suitable for D.C. mains and may still be used if the supply should subsequently be changed to alternating current. For A.C. mains the synchronous motor, whether in its simplest form for starting by hand or of the self-starting type, gives absolutely constant speed and avoids the complication of governor mechanism, while the induction motor offers the possibility of speed control for recordings designed to run at speeds other than 78 r.p.m.



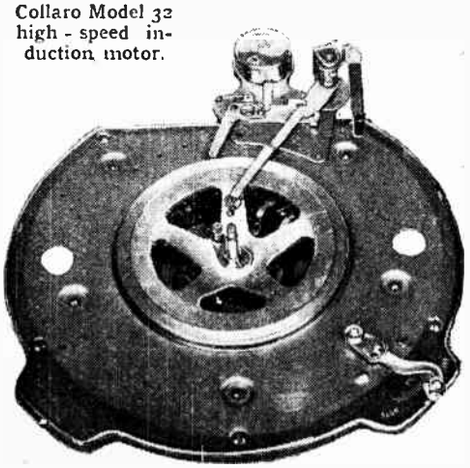
Simpson's electric turntable, a synchronous motor of exceptionally small depth.



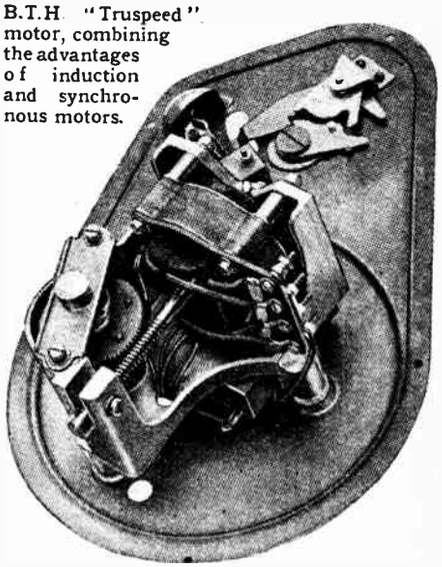
Collaro Model 32 high-speed induction motor.



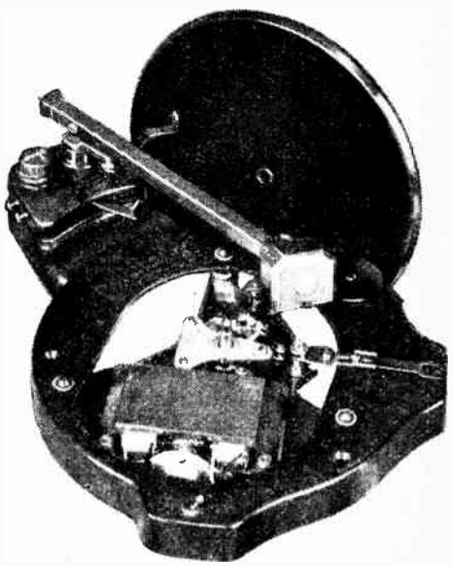
B.T.H. slow-speed "Universal" motor.



Garrard slow-speed induction motor.



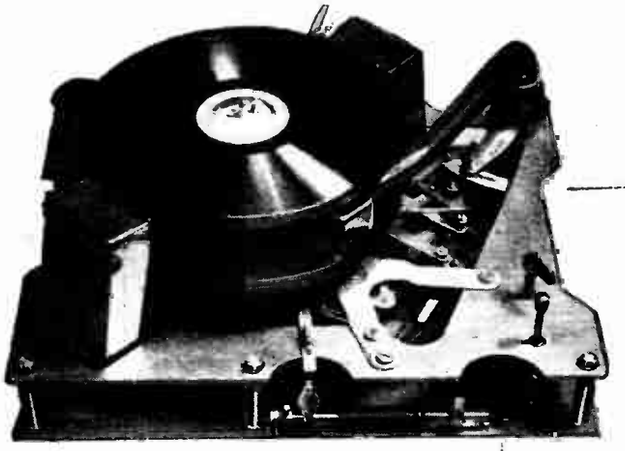
B.T.H. "Truspeed" motor, combining the advantages of induction and synchronous motors.



Univolt high-speed induction motor incorporated in a shallow playing unit with pick-up and volume control.

Choosing a Record Changer

Important Details Affecting Smoothness of Operation

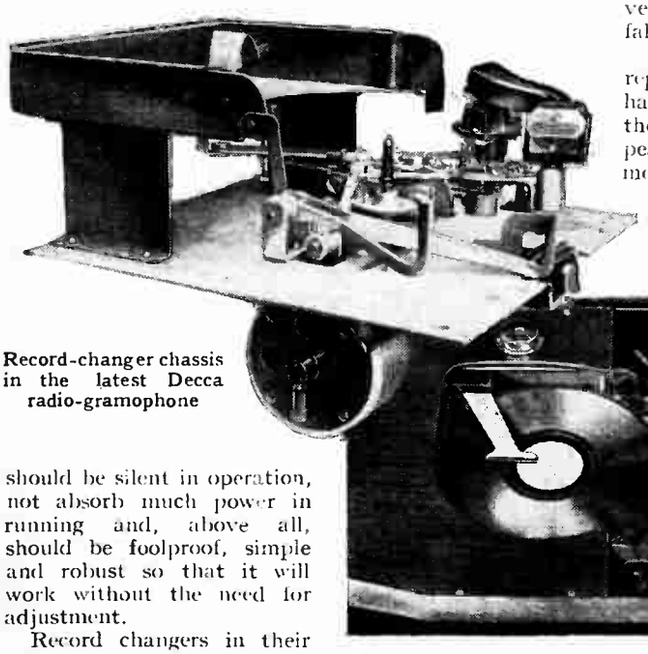


Record-changing mechanism fitted to current H.M.V. radio-gramophone.

THE automatic record changer has found such popularity as an adjunct to the radio-gramophone that it has become standardised in many of this season's more ambitious equipments. As it is a complicated piece of mechanism the finer points of construction should be studied before making a choice.

OWING to the somewhat complicated work which a record-changing mechanism has to perform and to the fact, comparatively speaking, that it is yet only in the development stage, too much care cannot be taken in making a choice. It is the purpose of this article to consider some of the points which require attention.

First of all let us think of all that an "ideal" record changer should do and then go on to see how near the commercial instrument approaches it. Our "ideal" machine must be capable of taking at least eight records of any size and make, play both sides of each in succession and stop at the end. There must be no appreciable interval between the finish of one record and the start of the next, nor must the pick-up needle require any attention. Records not liked must be capable of instantaneous rejection at the pressure of a button and another button should permit a record to be repeated. The mechanism should be silent in operation, not absorb much power in running and, above all, should be foolproof, simple and robust so that it will work without the need for adjustment.



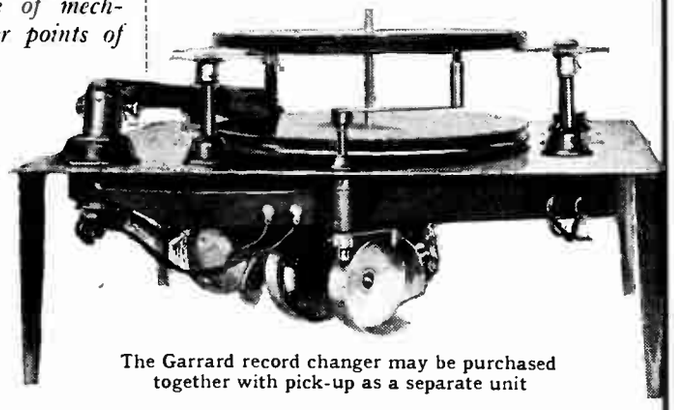
Record-changer chassis in the latest Decca radio-gramophone

Record changers in their present state fall rather short of this ideal. In the first place, as far as the writer is aware, all the changers at present on the market play only one side of each record. Series of double-sided records of symphonies are now available, however, with consecutive parts on separate records so that the principal objection to this type of instrument has been met. Only one turnover of the pack of records is involved in the playing of a complete work.

In most types, the records to be played are stacked on a shelf or catch immediately above the turntable, on which the first record is placed. The pick-up plays this record and when it reaches the end is raised and carried outwards. The record at the bottom of the pile is then allowed to drop on to the top of that already on the turntable. An escapement mechanism prevents more than one record falling at a time.

The cycle of operations is repeated until all the records have been played, when either the last record will be repeated indefinitely or the motor will be switched off. Most makes also include "repeat" and "reject" controls for earlier records.

It will be readily seen that following this principle it is impossible to mix 10- and 12-inch records because the ledge designed for supporting the 12-inch disc will let the smaller ones fall through. In most machines an adjustment gives alternative positions of the ledges—one for 10- and the other for 12-inch records. Further, the catch may not be capable of supporting all makes of standard record owing to slight variations in outside diameter. Great care should be exercised over this point and a comprehensive selection of records tried before buying. The writer has found some machines incapable of dealing with a variation of even $\frac{1}{8}$inch from standard diameter.



The Garrard record changer may be purchased together with pick-up as a separate unit

Another point to be watched is whether the throw-off mechanism will function on all records. Some changers are designed to work only with records having an eccentric run-off groove and the changing mechanism will not operate when a concentric groove record is played.

A point to notice is how smoothly the records fall down into place. Avoid a machine which treats the records harshly.

Little seems to be done as regards machines for playing both sides of a series of records. The problem, however, is being tackled and no doubt some solution will be found in due course, though the question of its commercial production is quite another matter since the manufacturing costs would necessarily be high. Another point to watch in buying a record changer is the length of time taken to effect a change. Some makes take as much as 20 seconds, while others make the change in as short a time as 5 seconds. Obviously the quicker the change the better, provided the records are not roughly handled in the process. Little can be said regarding the mechanism itself. The operations involved naturally call for a somewhat complicated mechanism and all other things being equal the machine with the least "works" should be chosen as being less likely to go wrong. Record-changing turntables are always electrically driven. A spring motor would not have sufficient power to work the mechanism and play all the records at one winding unless very cumbersome. The record-changing unit is generally already equipped with a pick-up, and the quality of this must not be neglected in buying. When testing, listen to the quality of the music to make sure that the motor is not causing unevenness.

S. F. P.

Practical HINTS AND TIPS

AIDS TO BETTER REPRODUCTION

WHEN a pick-up is fitted to a receiver which derives its current supply from either batteries or A.C. mains there is virtually no risk of introducing a short-circuit across the source of supply. But when making this addition to a D.C. mains receiver it is strongly advised that special precautions should be taken, as in some cases the pick-up and its external connecting leads will be at practically the full voltage of the mains with respect to earth. As a consequence, annoying or even dangerous shocks may be felt when handling the pick-up, and considerable damage may be done through short-circuits.

D.C. Mains Precautions

To be on the safe side and, what is equally important, to comply with both the word and the spirit of the various regulations, it is wise to make provision for isolating the pick-up from the mains. The arrangement embodied in the latest *Wireless World* D.C. receiver (the "Modern D.C. Three"), which is reproduced in Fig. 1, is to be advocated. It will be observed that the pick-up is entirely isolated, so far as D.C. voltages are concerned, by a pair of 1-mfd. condensers; in order that grid bias may be applied to the grid of the detector valve—or, rather, to the first amplifying valve, into which it is converted—a resistance R must be interposed. The value suggested will be found suitable in almost every case.

It should be added that where indirectly heated D.C. valves are used it may be necessary, in certain cases, to "tie down" one side of the valve heater to the earth line by means of a large condenser (marked C in Fig. 1).

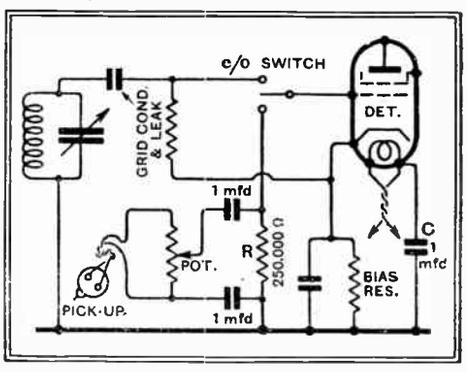


Fig. 1.—A safe method of connecting a pick-up to a D.C. mains set.

WHEN a receiver already includes a post-detection (or L.F.) volume control, it might appear that the addition of a pick-up would not involve the fitting of any additional means for regulating intensity. But the voltage output of most modern pick-ups is quite high, and if it be applied in full to the grid of the average detector valve (temporarily converted into an L.F. amplifier) it is more than probable that overloading will be produced. The fact that volume may be cut down to any required level by operation of the existing post-detection control does not in any way obviate the ill-effects of this overloading.

Fixed Pick-up Potentiometer

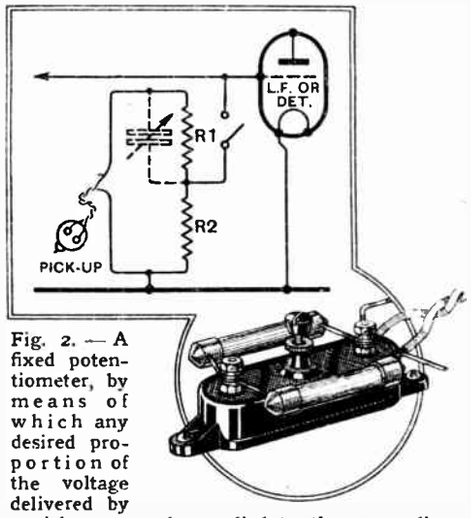
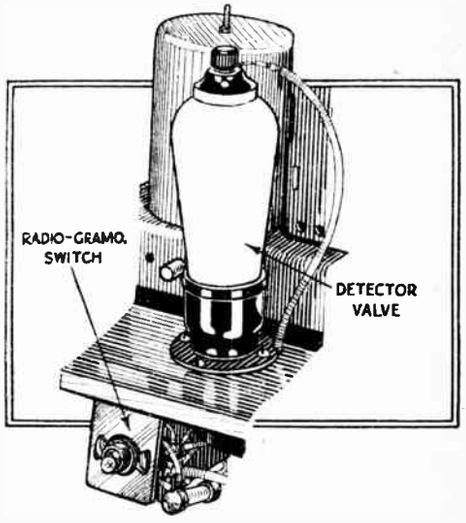


Fig. 2.—A fixed potentiometer, by means of which any desired proportion of the voltage delivered by a pick-up may be applied to the succeeding valve. A simple tone corrector, in the form of a semi-variable condenser, may be added.

In cases such as those we are considering the expense of an extra variable potentiometer may be avoided by shunting the pick-up with a fixed potentiometer, as shown in Fig. 2.

The combined ohmic value of the two resistances forming the potentiometer should equal that recommended by the makers of the particular pick-up that is to be used. The proportion of the pick-up output voltage that will be applied to the grid is determined by the relative value of the two resistances; if it is desired to apply only half the available voltage, then they may be of equal value. With a sensitive pick-up and a receiver giving high magnification it will probably not be necessary to use more than one-quarter of the available pick-up voltage; in this case the resistance of R1 should be three times that of R2.



The radio-gramophone switch and detector valve of "The Modern D.C. Three" are mounted close together.

In order to compensate for the loss of high notes that may result from making a drastic reduction in applied pick-up voltage, the upper limb of the potentiometer may be shunted with a semi-variable condenser, as shown in dotted lines. To strengthen high notes the value of the condenser is increased by screwing its knob in a clockwise direction.

This method of tone control, though so simple, is extremely effective, especially if the associated resistances have high values. Assuming R1 to be something between 100,000 ohms and ¼ megohm, a maximum capacity of 0.001 will be about right.

WHEN making provision for the addition of a pick-up to an existing receiver it is worth while to mount the radio-gramophone change-over switch as close as possible to the valve with which it is associated. In nine cases out of ten this valve will be the detector, which will have to deal with both H.F. and L.F. impulses.

The Radio-gramophone Switch

Although this precaution is perhaps not of very great importance when the simplest form of switching is fitted, it is certainly highly desirable when a change-over switch is used, as, for

Practical Hints and Tips—

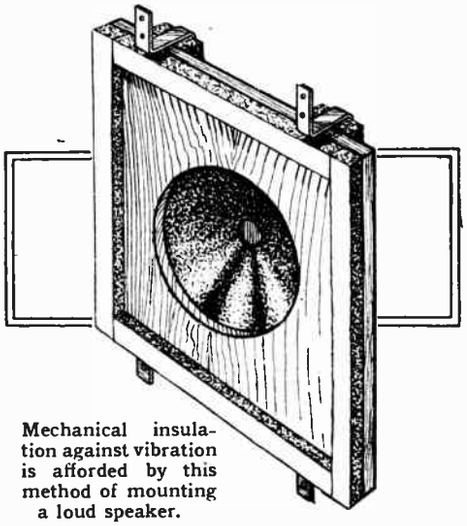
example, that shown in the accompanying Fig. 1. Two of the leads connected to the switch carry H.F. currents.

If it is impossible to mount the switch in close proximity to the valve it may be found necessary, in order to prevent instability, to shield one or more of its connecting leads in metal-braided sleeving. This course, though unobjectionable from most points of view, may add so much extra stray capacity to the associated tuned circuit that the waveband covered by the receiver will be restricted.

IN a self-contained radio-gramophone with built-in loud speaker a more or less serious resonance effect is sometimes caused by the transmission of vibration from speaker to receiver. Although modern valves are not usually microphonic, the possibility that this defect is responsible should not be ruled out entirely. Again, vibrations may be of such an amplitude that the condenser vanes will be affected, and this is particularly likely to cause a puzzling effect in a superheterodyne.

Insulation Against Vibration

Whatever the precise cause of the trouble may be, mechanical insulation will generally cure it, and it is not a difficult matter to mount the entire receiver chassis on blocks of sponge-rubber or similar material. Of course, all the good

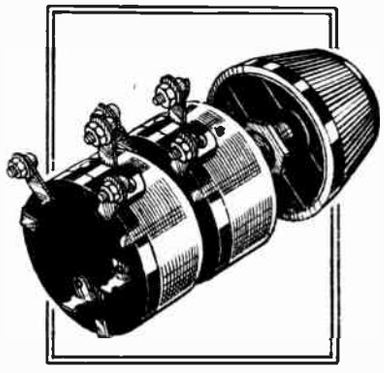


Mechanical insulation against vibration is afforded by this method of mounting a loud speaker.

done in this way would be entirely offset by screwing the control spindle bushes rigidly to the front of the cabinet; to use an electrical analogy, this would short-circuit the mechanical insulation afforded by the rubber. When this plan is adopted it is generally best to make the control panel integral with the receiver chassis, and to cut a vignette in the face of the cabinet to expose the control knobs.

It will sometimes be easier to attack the problem from an opposite angle, and to insulate the loud speaker itself in such a way that the vibration from it cannot be transmitted to the receiver through the woodwork. To do this the loud speaker is screwed to a sub-baffle measuring perhaps a foot square, which is mounted behind the "fret" of the cabinet. Again, strips of insulating material, such as felt or sheet sponge-rubber, must be interposed between the sub-baffle and the cabinet, as suggested in the accompanying sketch. Further, blocks of insulating material must be placed under the clamps by which the sub-baffle is held in position.

These precautions should remove the cause of certain types of resonance, and also of howling, provided the latter be due to mechanical reaction, and not to electrical reaction. Before going to the trouble of providing insulation in the manner suggested it is not a bad plan to make a test by temporarily removing the receiver from its cabinet, connecting the loud speaker by long leads, and then observing whether performance of the set is improved.



A pair of ganged Rotor-ohm potentiometers, suitable for a combined radio and gramophone volume control. An on-off switch is included.

ALTHOUGH it is not the purpose of this note to suggest that the number of control knobs on a receiver or radio-gramophone should be reduced to such an extent that desirable adjustments cannot be made, it is always worth while to simplify operation if this can be done without prejudice to efficiency. It is particularly desirable to do so when the set is to be operated by non-technical members of the household.

Twin Volume Controls

It is obviously all to the good if the same control knob which determines the loudness of radio reproduction shall also be operative when the set is converted for use with a pick-up. In a few cases it is just possible to arrange matters so that the potentiometer which customarily performs this duty shall act in both cases, but as a rule a relatively complicated system of change-over switching will be necessary, and so the plan is not one to be generally recommended.

But an exactly similar effect, from the point of view of the user, can be brought about by using a double-unit potentiometer of the type that is now obtainable commercially. Both potentiometers are mounted on the same spindle, and are actuated by a single external knob.

In wiring up, the two potentiometers should, of course, be treated as separate units—as indeed they are—but care should be taken to see that the ends of the resistance elements are connected in such a way that the volume of reproduction for both "radio" and "gramophone" is increased by rotating the knob in the same direction.

IT will hardly be necessary to say that the usual procedure of inserting a pick-up in the grid circuit of a detector valve is not applicable when diode detection is employed. The two-electrode detector is no more an amplifier than is a crystal, and without a very elaborate switching scheme cannot be made to act as one.

Diode and Pick-up

The rule to apply when converting such sets for gramophone reproduction is to connect the pick-up in the grid circuit of the L.F. valve which immediately succeeds the diode. In order to isolate the latter a change-over switch may be employed, but when dealing with battery-operated sets the somewhat simpler plan shown diagrammatically in Fig. 3 may be preferred. In addition to the usual switch by means of which the pick-up is connected, another switch is connected in the diode filament circuit; this should be opened when the set is being used for gramophone reproduction. Failure to observe this precaution will introduce distortion, but the presence of the diode will do no harm providing its filament is cold. The incidental capacities associated with the diode are so small that their presence is most unlikely to cause any falling off in quality, while the load resistance, which is effectively in parallel with the pick-up, is so high that it will have virtually no effect.

Of course, this arrangement applies only to battery-operated sets, in which, incidentally, it is economical to make provision also for extinguishing the filament of the H.F. valve while the pick-up is in use. These various operations can be effected simultaneously by means of a single multi-contact switch.

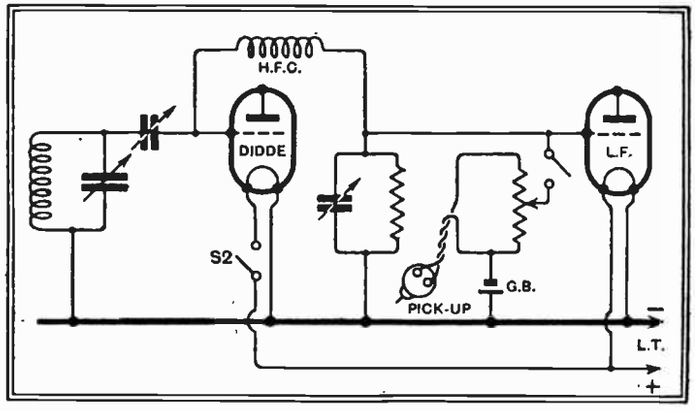


Fig. 3.—By interrupting the filament circuit of a diode detector, a pick-up may be connected to the grid of the succeeding L.F. valve in the simple manner shown.

SYNTHETIC SOUND

INHUMAN perfection of articulation and other remarkable phenomena are claimed as possible with the new system of artificial sound production now being experimented with by a German acoustic expert, Rudolf Pfenniger. The method is based on the variable area system of sound recording on film.

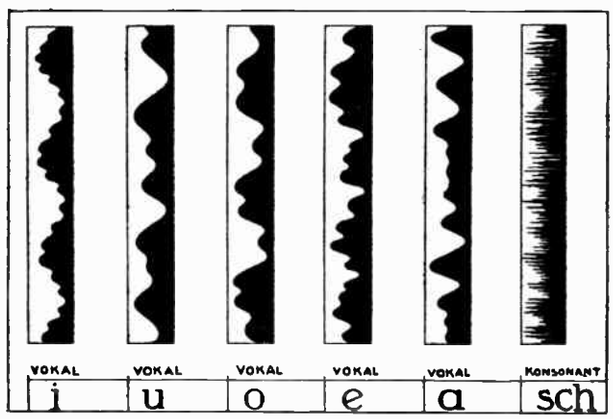
By HERBERT ROSEN

Voices from Pencil Strokes

THERE seems no limit to the possibilities of the sound film. Only recently an Austrian firm produced an interesting type of record consisting of nothing more nor less than long rolls of paper tape; now we learn that a German, Rudolf Pfenniger, with the assistance of the Bavarian Film Company, is producing from paper strips records of human speech that no lips have ever spoken! Records of songs, too, that no human voice has ever sung!

Studying Zig-zags

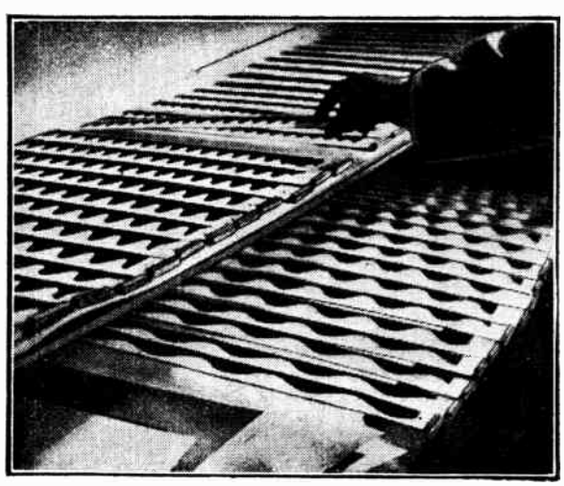
This miraculous-sounding achievement is the result of a lengthy and gruelling study, under the microscope, of the characteristic shapes of the zig-zag outlines of innumerable sound-on-film records —such as are used for "talkies" in which the variable-area system is employed. Like a five-year-old learning to read and write, letter by letter Pfenniger mastered the appearance of the various sounds as recorded on the films, so that in time he was able to "read" a film as well as if it were the strip out of a tape-machine. But this was only the first step; presently he developed such a virtuosity that he could draw, with a pencil, his own zig-zag outlines, which, when passed through the reproducer, sounded just like human speech.



Wave forms, drawn by Herr Pfenniger, representing the five vowel sounds and a commonly used German consonant.

Nowadays, with increasing skill, he can even improve on the product of us poor imperfect humans, smoothing and polishing his curves until his results give an inhuman perfection of articulation which even a B.B.C. announcer can never attain! It is even reported that in his lighter moments Herr Pfenniger can produce the most amusing effects by playing all sorts of tricks with the human voice.

The general idea underlying this work is not new, but we believe that efforts have not hitherto been directed towards producing results of such precision nor on so ambitious a scale.



To facilitate rapid preparation of records Herr Pfenniger has manufactured stencils.

Helping the Dumb Talk

It is almost impossible to foresee just where this new technique will lead us. Is it, for instance, possible that the music of a sound film will be recorded by one man at his desk instead of by an orchestra in a large studio? And—the bright idea occurs to us as we write—will a dumb man be able to talk by tapping out his speech on a special keyboard like that of a typewriter but actuating artificial sounds instead of printed letters? And will our politicians, addressing their constituents, scorn to rely on their poor human larynxes and use instead the awe-inspiring perfection of Science's latest achievement?

But, to refer to a possible application of more immediate utility, could not the principle be applied to taking the "Yank" out of American films so that those little peculiarities of speech which jar the nerves of B.B.C.-trained ears could be suppressed without changing the film actors or going to the expense of a specially recorded film for English patrons of the cinema?

New Amateur Call-Book

THE winter quarterly issue of the "Radio Amateur Call-Book" has now been issued, and is obtainable in Great Britain from Mr. F. T. Carter, Flat A, Gleneagle Mansions, Streatham. Owing to the dollar exchange the price is now 6s. 6d., post free, for single copies, or 21s. for the four quarterly issues.

The list of call-signs, names and addresses of all known amateur transmitters in the world now extends to 185 closely printed pages, and is, we believe, the only one of its kind now published, since, for reasons of economy, the American Government has ceased issuing their official list of American amateurs.

In addition to the main list, short-wave enthusiasts will find other useful information, such as Press and weather reports, and a fairly comprehensive list of commercial short-wave stations.

If we may judge by our own correspondence there are still many short-wave listeners who do not know of this publication, despite the fact that it is often mentioned in our columns, and to these we would say: "Now you know what it is and where you can get it."

BROADCAST BREVITIES

By Our Special Correspondent

Hypothesis

A DELIGHTFULLY characteristic theory has been evolved by the B.B.C. to account for the increase in the number of complaints concerning electrical interference with broadcast reception. It is that the programmes are so much more entertaining to-day that people cannot tolerate interruptions which would have gone unnoticed two or three years ago.

Uncanny Increase

Be that as it may, the figures are undoubtedly startling. In 1930 only 3 per cent. of the technical correspondence received related to man-made static; a year later it had risen to 19 per cent., and in 1932 to no less than 39 per cent.

Crackles as a Radio Miracle?

This is out of all proportion to the growth in the number of licence holders. There are probably several reasons for the increase. For example, listeners are undoubtedly more critical of results than they were a few years ago; probably crackles were once accepted as part of the miracle of radio.

The vastly increased popularity of domestic electrical appliances must also account for a good deal of noise.

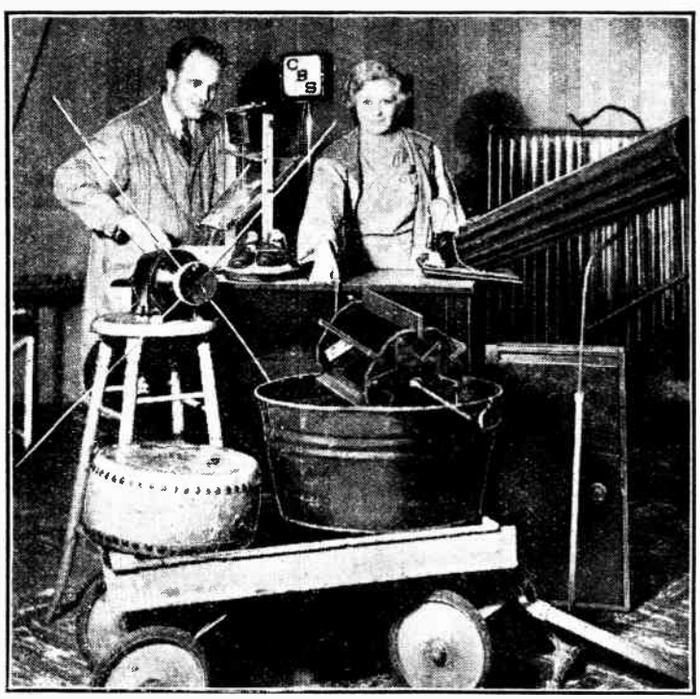
By way of remedy the B.B.C. firmly plumps for the silencing of electrical apparatus at the time of manufacture.

Defeating the Born Querist

Taken *en masse*, the technical correspondence received at Broadcasting House is definitely diminishing, and the B.B.C. put this down to the new vogue of "the unanswerable pamphlet." The various brochures now distributed to listeners in trouble are written in such simple, foolproof terms that even the born querist has difficulty in finding ambiguities worth writing about.

Should It?

TWO well-known journalists go to the microphone on February 11th to hold a discussion in the "Should they be Scrapped?" series. They are Mr. Hamilton Fyfe, former editor of a London paper and international correspondent, and Mr. Tom Clarke, former editor of an Australian paper, present editor of a London paper, and the living embodiment of modern journalistic methods as introduced by the late Lord Northcliffe. The subject of their discussion is "Should the Press be abolished?"



NOISE MAKING IN U.S. It is interesting to compare this picture with that of the B.B.C. "effects" department published in our issue of January 20th. Above are the appliances for producing storm and other noises in the Columbia studios. The artistes can depict falling rain, wind moaning, footsteps on gravel and other ominous effects.

Autograph Hunters at Large

HENRY HALL is threatened with writer's cramp. He tells me that when by special invitation the other day he attended the Lancashire Masonic Ball in Liverpool he conducted just one number by the local dance orchestra. The rest of the evening was taken up in signing autograph albums!

Making the Empire Dance

By special request, numbers by the B.B.C. Dance Orchestra are now included in every Empire transmission.

Provincial Protests

DIE-HARDS in the Provinces are still urging the B.B.C. to restore the local orchestras, though I feel sure that their efforts will come to nought. It is true that opinion is divided even at headquarters on whether the regions should each have their own musical combination; the Music Department, I hear, are in favour of such a scheme, but practical and financial considerations far outweigh the musical and the sentimental.

Drawbacks of Local Orchestras

The B.B.C. contend that the really big works which everyone wishes to hear can only be performed by the B.B.C. Symphony Orchestra. If, say, the Northern Region were given back its orchestra of 38 players, northern listeners would still complain, for their local orchestra would be unable to offer them the more ambitious symphonic works and would only occupy programme time which could be much better filled by the big orchestra in London.

Arguing Over the Atlantic

EVEN for those of us who can afford to ignore war debts and reparations the broadcast debate on this topic between students of Yale and Cambridge Universities on February 11th should hold an uncommon technical interest.

The pros and cons will be tossed to and fro over the Post Office Transatlantic 'phone, and I can imagine nothing more thrilling than a really heated debate over the watery wastes.

Presumably Father Neptune will preside.

Miss Dulcima Glasby

GOOD may yet come of the regrettable resignation of Miss Dulcima Glasby from the staff of the B.B.C. This talented adaptor of plays and books for broadcasting has lacked the time during her seven years of service with the Corporation to produce very much original work of her own; yet the one radio play that Miss Glasby did write—"Obsession"—was voted a rare success. I hope that her pen will soon be active in the production of original radio plays, of which—as Mr. Val Gielgud knows only too well—there are far too few.

A Lot in a Name

SO Maschwitz is Maschwitz and Marvell is Marvell, and never the twain shall meet. Which means that although Mr. Eric Maschwitz, the radio playwright, better known as "Holt Marvell," had intended to alter his name to the latter by deed poll, circumstances have ruled otherwise. The rumour published, fierce telegrams hurtled across from relatives in Poland intimating that the family was coming over to argue the point. The hasty reply said in effect, that, for the present, the writer would remain, theirs devotedly, Eric Maschwitz.

Physical Jerks.

THE vision of a hypothetical apoplectic colonel seems to loom up in the eyes of the B.B.C. whenever radio "physical jerks" are suggested. The official attitude seems to be that the broadcasting of early morning exercises would lead elderly or delicate persons to attempt the impossible with baleful results, and that the responsibility for these (imaginary) disasters would be laid at the door of Broadcasting House.

The Reason?

The argument is so easily answered that one wonders whether there is not some underlying deterrent to ante-breakfast broadcasting. Are the B.B.C. late-risers?

Warmed-Up Thrills

MR. LIONEL SECCOMBE made a splendid attempt to give us the excitement of a running commentary in his eye-witness account of the Petersen-Pettifer fight, but did not quite succeed. The description made me think of a good dinner warmed up a second time for supper.

Why Not the Blattnerphone?

A friend suggests that the B.B.C. might well copy the German method of taking an actual record of events which cannot for various reasons be broadcast at the moment of happening. If Mr. Seccombe could have given a running commentary over the line to Broadcasting House, his remarks—plus the crowd noises—being Blattnerphoned, the item would have been much more successful when re-transmitted half-an-hour later.

I commend the idea to Mr. Gerald Cock, the "O.B." chief.

"Hassan"

A BRILLIANT cast of twenty-five has been engaged for the broadcast of "Hassan," part one of which is to be heard on the National wavelength on February 7th and part two on the Regional wavelength on February 10th. The name part will be played by Henry Ainley, that of the Caliph by Ronald Simpson, Ishak, his minstrel, will be Leon Quartermaine, and Rafi, King of the Beggars, Ion Swinley. The Executioner will be Abraham Sofaer, and the narrator, Harman Grisewood.

Just the Same in China

IN its struggle with conflicting interests, such as the General Theatres Corporation, the B.B.C. should gaze eastwards for a few moments and take courage in the thought that it has a companion in distress in far-away China. According to the *Radio Corriere*, the Chinese theatrical interests, which have been in the business since two or three thousand B.C., are savagely accusing the National broadcasting authorities of ruining the theatre through the medium of the loud speaker.

The Only Way

A few months ago, it seems, young and old alike in the cities of Shanghai, Pekin and Nankin, would sit around the theatrical booths and watch the same old antics that had amused their forefathers for generations. Now, however, they turn their backs on the mummers, preferring the more sophisticated radio entertainment.

The Chinese theatre ought to amalgamate with the radio business while the going's good. Alternatively, it might seek an exclusive alliance with the television and cinema interests.

Jack Payne Again

ANOTHER broadcast by Jack Payne with his Band takes place in the National programme for February 13th. These old friends of broadcasting are giving performances before the microphone at the rate of one a month to enable them to keep in touch with the listening public, who now have the opportunity of seeing them in the flesh as well as hearing them by wireless.

A Radio Mass

"LA MESSE du Cinéma et de la Radio" was celebrated at the Madeleine, Paris, on January 19th, when Archbishop Verdier, addressing a large congregation, declared that the "intellectual and moral welfare of the multitude" was largely in the hands of those controlling broadcasting.

Do Americans Copy Us?

A WASHINGTON friend tells me that "three cardinal crimes" in every-day and especially in radio speech have been specified by Miss Dagmar Perkins, president of the U.S. National Association for American Speech. They are: (1) Failure to open the mouth widely enough; (2) ignorance or carelessness of diction; and (3) too much imitation of English.

"What we want," said Miss Perkins, "is pure and beautiful American."

ON THE SPOT

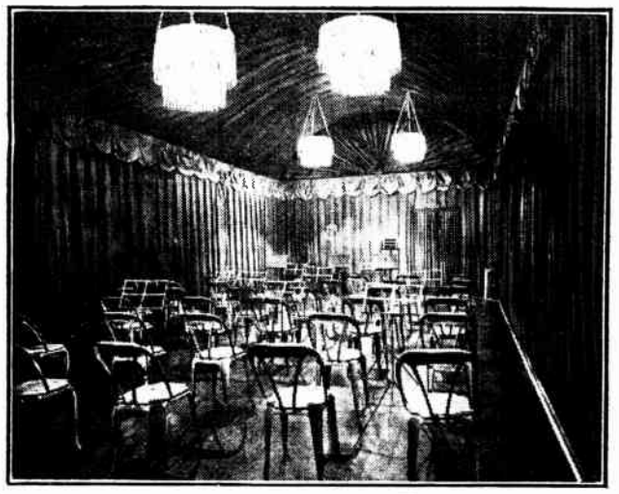
VISITS TO FOREIGN BROADCASTING STATIONS

V.—Radio Toulouse, 779 kc. 385.1 m.

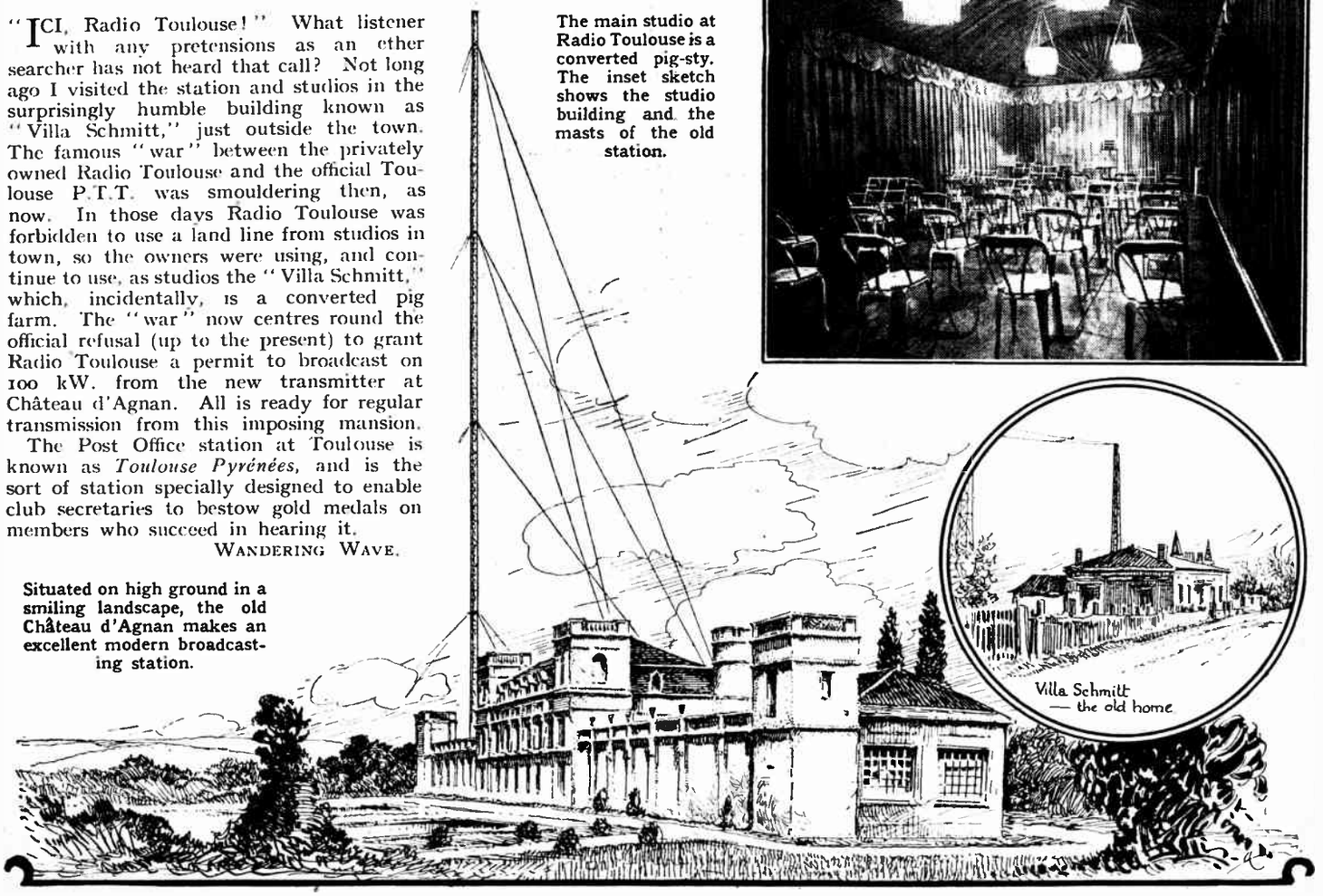
"ICI, Radio Toulouse!" What listener with any pretensions as an ether searcher has not heard that call? Not long ago I visited the station and studios in the surprisingly humble building known as "Villa Schmitt," just outside the town. The famous "war" between the privately owned Radio Toulouse and the official Toulouse P.T.T. was smouldering then, as now. In those days Radio Toulouse was forbidden to use a land line from studios in town, so the owners were using, and continue to use, as studios the "Villa Schmitt," which, incidentally, is a converted pig farm. The "war" now centres round the official refusal (up to the present) to grant Radio Toulouse a permit to broadcast on 100 kW. from the new transmitter at Château d'Agnan. All is ready for regular transmission from this imposing mansion.

The Post Office station at Toulouse is known as *Toulouse Pyrénées*, and is the sort of station specially designed to enable club secretaries to bestow gold medals on members who succeed in hearing it.

WANDERING WAVE.



The main studio at Radio Toulouse is a converted pig-sty. The inset sketch shows the studio building and the masts of the old station.



Situated on high ground in a smiling landscape, the old Château d'Agnan makes an excellent modern broadcasting station.

READERS' PROBLEMS

THESE columns are reserved for the publication of matter of general interest arising out of problems submitted by our readers.
Readers requiring an individual reply to their technical questions by post are referred to "The Wireless World" Information Bureau, of which brief particulars, with the fee charged, are to be found at the foot of this page.

Dual Loud Speakers

WE are asked to summarise briefly the main advantages of so-called "dual compensated" loud speakers, which consist of a pair of instruments specially matched for working in conjunction with each other.

Although the subject is not entirely free from controversy, and further, not all dual loud speakers are planned with precisely the same objects in view, the matter may be summed up in general terms without risk of being seriously misleading.

As a rule, the frequency range covered by dual loud speakers of the normal type is but little wider than that of a single loud speaker of similar design. This does not apply to designs in which one of the units is intended to act almost solely as a reproducer of the higher audible frequencies.

Matched pairs, in which individual units have slightly different characteristics, are capable of a power-handling capacity of more than twice that of a single similar instrument; further, there is a considerably greater immunity from resonances, since each instrument tends to damp out the resonance of the other. Again, some improvement in sensitivity is to be anticipated.

Superior-quality Q.P.P.

A NUMBER of readers have asked whether there is not some simple way of using existing push-pull L.F. transformers with a low step-up ratio (in the order of 1:3.5) in a quiescent push-pull receiver, on the lines of that recently described in this journal.

With any practical grid detector, we fear that without the help of a considerable voltage step-up, as afforded by the special types of L.F. transformers produced specially for this new circuit, it would be impossible to feed a quiescent push-pull output stage directly from the detector valve. Consequently, an intermediate L.F. stage must be interposed if a low-ratio transformer is to be used, and we do not know of any satisfactory alternative to this plan.

As a result of adding this extra valve there is a distinct risk of introducing instability, but the difficulties in this direction are by no means insuperable, as the amount of extra magnification needed is relatively small. Even this possibility of trouble might be overcome almost entirely by adopting diode detection, a plan suggested by another reader, who already uses this method in his receiver with extremely satisfactory results, and wishes to retain its advantages in combination with the additional ones offered by the Q.P.P. system. He asks us to suggest a suitable circuit arrangement.

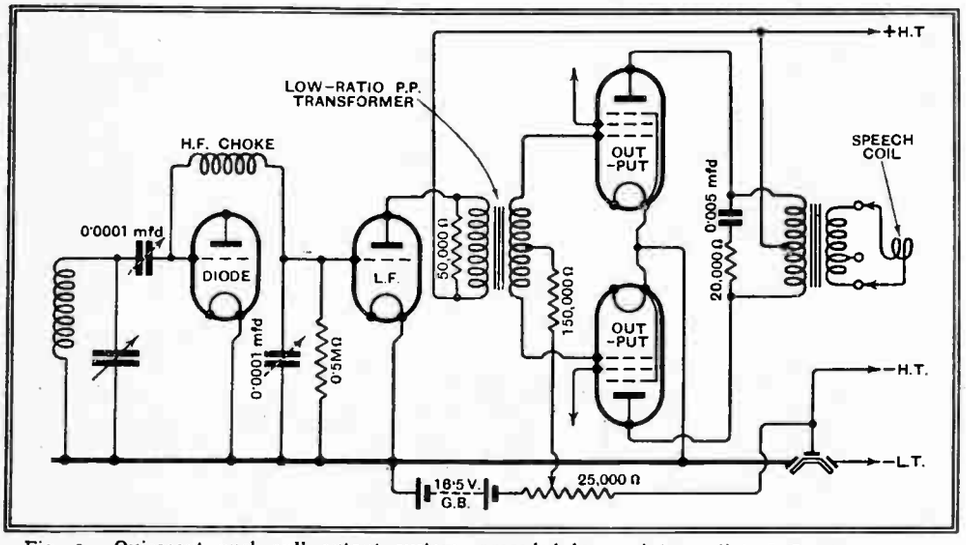


Fig. 1.—Quiescent push-pull output system, preceded by an intermediate L.F. stage and a diode detector.

The circuit given in Fig. 1 should meet the needs of this reader. From the L.F. valve onwards, the arrangement is precisely the same as that of the "Quiescent Push-pull Two," while the diode detector connections are quite conventional. In spite of the fact that an extra valve is employed, the drain on the H.T. battery will not be increased, as the diode valve requires no anode current.

Of course, an arrangement of this nature may be preceded by an H.F. stage.

For Low-Impedance Circuits

AS has already been stated, the "Whistle Suppressor" (*The Wireless World*, October 28th) works at its best when connected to a circuit of high impedance.

A reader who is using, for local-station reception, a "quality" receiver with low gain resistance-coupled L.F. circuits and a low-impedance output stage, is troubled by whistle interference from foreign stations after dark; this is by no means an uncommon occurrence at this time of year, even when the receiver is of low sensitivity. He concludes, quite rightly, that a device like the "Whistle Suppressor" should provide a satisfactory cure without appreciably affecting the brilliancy of reproduction which is a special feature of his set, but doubts whether the device as described would be suitable for his own set.

We think that in this case better elimination would be obtained by using lower inductance and higher capacity values in the suppressor. It is suggested that the coil in the unit should be halved in inductive value by winding on only about 70 per cent. of the number of turns specified, and that all capacities should be doubled. This means that a tuning condenser of 0.001 mfd. will be needed, but components of this value are obtainable commercially without very much difficulty.

More Voltage Step-up Needed

IT is not difficult to recognise the signs of detector overloading, which is a more common defect in present-day receivers than is generally realised. In very bad cases there may be a wipe-out effect, strong signals being tuneable at two distinct positions on the dial. This is often due merely to excessive signal strength.

But it will sometimes be painfully evident that reasonable volume cannot be obtained when strong—as opposed to over-strong—signals are being received, and for this the detector must always be suspected if it is known that the output stage is free from blame. Yet another indication is that tuning appears to be excessively broad when receiving fairly strong signals, but is sharpened appreciably when weak ones are tuned-in.

These various symptoms are described in recent letters, and we are asked to suggest how matters may be improved.

Although each case should perhaps be dealt with individually, it may be pointed out that the power-handling capabilities of a grid-leak detector may always be increased by applying a greater H.T. voltage to its anode. Even when the maximum voltage available is already being used a similar result might sometimes be achieved by reducing the value of decoupling resistance, but, of course, there is always the risk that this may produce instability. Another sovereign remedy, and perhaps the safest to apply, is the substitution of an L.F. transformer having a greater step-up ratio than the component at present in use. If quality of reproduction is to be maintained the new transformer should be of good design, and this is a case where undue economy should not be exercised.

The Wireless World

INFORMATION BUREAU

THE service is intended primarily for readers meeting with difficulties in the construction, adjustment, operation, or maintenance of wireless receivers described in *The Wireless World*, or those of commercial design which from time to time are reviewed in the pages of *The Wireless World*. Every endeavour will be made to deal with queries on all wireless matters, provided that they are of such a nature that they can be dealt with satisfactorily in a letter.

Communications should be addressed to *The Wireless World* Information Bureau, Dorset House, Tudor Street, E.C.4, and must be accompanied by a remittance of 5s. to cover the cost of the service. The enquirer's name and address should be written in block letters at the top of all communications.

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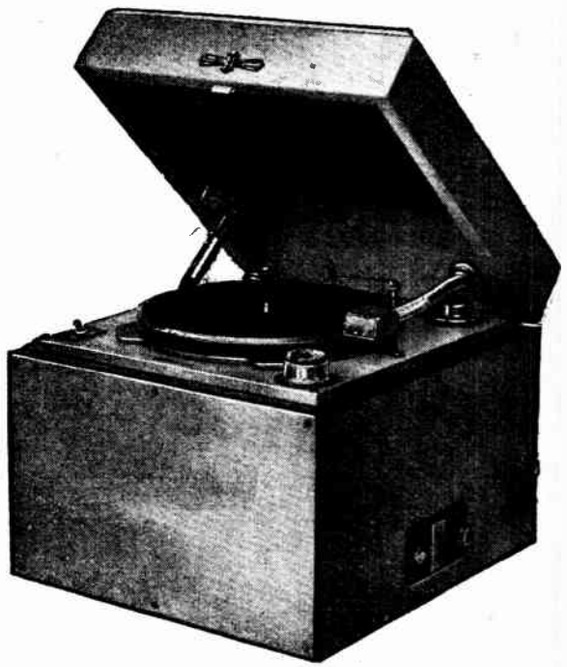

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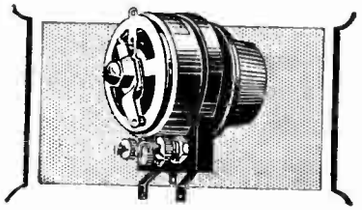
POTENTIOMETERS
MEET EVERY KNOWN NEED

The new range of variable resistances have been designed to meet the demand for a component with a particularly silent and smooth movement. The curve of the potentiometer is arranged "straight line," which gives a straight line ratio between angular movement and resistance variation. The resistance can be supplied with "straight line" or logarithmic curves according to requirements. In resistances of a value more than 50,000 ohms, the guaranteed tolerances are -15 per cent and +30 per cent of the rated values. In the case of low value resistances, the corresponding guaranteed tolerances are + or -10 per cent. These components are also supplied with a combined switch, making an extremely neat and robust unit. The switch has a quick make and break movement, and will handle 1.2 amperes at 250 volts without arcing.

Prices for your special requirements on application



Preh

POTENTIOMETERS AND RHEOSTATS

PREH MANUFACTURING Co. Ltd.
Broadwater Road, Welwyn Garden City.

Manufacturers and wholesalers only supplied.

Sole Sales Organization: Harwell Ltd., The Sessions House, Clerkenwell Green, E.C.1. 'Phone: Clerkenwell 6905-6.

All the stations on the FARADAY ALLWAVE

It gives a range of 15 to 2,000 metres on one dial—and no coils to plug in. The thrills of short-wave reception can now be enjoyed by everyone, stations from America and Australia being received with ease. A set with an amazing performance. Choose your stations from those listed in this number and the FARADAY ALLWAVE SUPERHET will get them for you. However far away the station may be, it's all the same to the FARADAY, for this receiver covers the world on the ultra-short, short, medium and long wave-bands. Amazing selectivity and sensitivity on all four wavebands, but NOT at the expense of quality or upper register response.

Our claims are endorsed by "The Wireless World" test report:

"Just as simple and easy to operate as an ordinary domestic receiver. Without making any allowances for the attractions that it offers in the way of short-wave reception the FARADAY set makes a remarkably good showing. Selectivity on the broadcast band is surprisingly good. On short-waves the set bore comparison with a specialised 'Super' which was vastly more difficult to operate. Sensitivity of the FARADAY was virtually as good and quality was better."

WRITE FOR A COPY OF THE FULL REPORT

FEATURES.

GENERAL. A self-contained five-valve superheterodyne with built-in moving-coil loudspeaker of the energised type. For operation on A.C. mains with external or mains aerial; D.C. model also available. Four wave-ranges: short, 15-30 metres; long-short, 30-60 metres; medium, 215-550 metres; long, 950-2000 metres. Five tuned circuits with one-knob control, compensating tone control, provision for mains aerial and gramophone pickup. Additional loudspeaker or headphones if desired for extra charge.

CIRCUIT. Signal frequency H.F. stage; combined detector oscillator, one I.F. stage, anode-bend second detector, resistance coupled to output pentode. Full-wave power rectifying valve.

CONTROLS. (1) Single-knob tuning. (2) 4-position wave-range switch. (3) Combined volume control and on-off switch. (4) Tone-control switch.

Few sets are designed to receive other than medium and long wave stations, that is why the FARADAY ALLWAVE SUPERHET is so popular.

PRICE

27 GNS. (inclusive of Royalties). Table stand 30/- extra. Chassis, complete with speaker and valves: **£25 : 13 : 0** including Royalties. Special model for Overseas available, **£30** in walnut cabinet or **£32** in teak cabinet.

FARADAY

ALLWAVE WIRELESS LTD.,
1, Salcott Road, S.W.11.
Tel.: Battersea 2085.

SERVICE CONSTRUCTION EXPERT ADVICE

THORNBER ENGINEERS
RADIO RICHARDSON

Green Lane, ROMILEY, Stockport, nnd 10, Chidlow Avenue, WITHINGTON, Manchester.

SERVICE A guarantee to correct the fault in any set in three days from receipt. We specialise in tuning up and adjusting all wireless equipment.

CONSTRUCTION We undertake to build any "Wireless World" or other specified chassis or complete set and deliver instrument and aerial tested, inside fourteen days, with a guarantee of satisfaction to the most discriminating listener.

PHONE (DIDSBURY 1801) (WOODLEY 2481)

All parts supplied for any specified set by return.

OSBORN'S NEW RADIO-GRAM CABINET FOR ONLY 35/-

WRITE FOR FREE CATALOGUE.

Model No. 201. A Radio-Gram. Cabinet by "Osborn" for 35/- in Figured Oak, 3' 2" high, 1' 10" wide, 1' 4" deep. Height between motor board and baseboard 12½". Height for pick-up 4". Accommodates a baseboard 18" × 14" or smaller. Ample room for any type of speaker and batteries. Morticed and tenoned throughout. Silk fabric, baffle board and baseboard are included. The panel above fret will be cut to your specification.

PRICES:

Machined Ready to Assemble £1 15 0
Assembled Ready to Polish . £2 10 0
Assembled and Polished . . . £3 5 0

All Models Carriage Paid.

CHAS. A. OSBORN, REGENT WORKS, ARLINGTON ST., LONDON, N.1. Telephone: Clerkenwell 5095. Showrooms: 21, Essex Road, Islington, N.1 Telephone: Clerkenwell 5634.

Osborn Super Acoustic Baffle Board. Prevents 90 per cent. speaker worry. Any size hole cut FREE. Guaranteed no vibration. 18 in. by 18 in., 3/-; 24 in. by 24 in., 5/-; 30 in. by 30 in., 8/-; 36 in. by 36 in., 11/3. Carriage paid U.K. Send for Free Sample.

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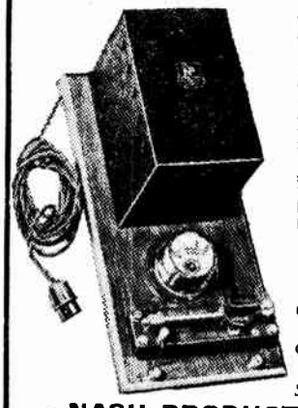
For A.C. Mains



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(illustrated) will charge one to eighteen batteries at once. 15-25 volts at 3 amps. Sliding Variable Resistance from small amperage—Westinghouse Metal Rectifiers. For H.T. and L.T. Cells.

Trade Price **105/-**

Complete, delivered.

Other models up to **£20**

Send for 1933 trade list

NASH PRODUCTS LTD.
STECHFORD, BIRMINGHAM (9)

10,000 GRAMO-MOTORS FROM STOCK

BIG CASH DISCOUNT ALLOWED

Make a Gramophone or Radiogram

Order loose kits and assemble them at home. Get for 3d. our new 64-page catalogue with scale drawings and instructions how to make them. We sell motors from 7/6, tone-arms, sound boxes, 1/6, pickups, big volume horns, loud-speakers, radio kits, complete receiving sets, gramophones, radiograms.

Established 1903.

THE REGENT FITTING CO., W.C. 120, OLD STREET, LONDON, E.C.1.

BRYCE PRODUCTS

Read these extracts from "Wireless World" Laboratory Test, Dec. 30, 1932, on the

"BRYCE" POWER PACK

For A.C. MAINS Drive "The model AB.2.P is intended for use with a "G" class rectifying valve, such as the Mazda UU120/500, and, in addition to providing a perfectly smooth H.T. supply of over 500 volts at 100 m.A., two separate L.T. supplies are available, one rated at 4 volts 5 amps. and the other at 4 volts 2 amps.

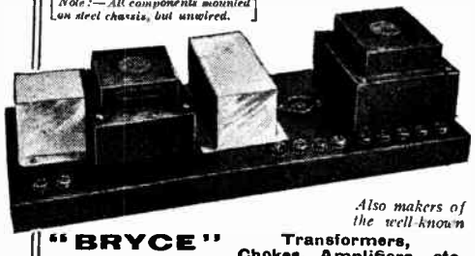
Power Margin "..... All the components employed are well suited for the parts they have to play; indeed, the specification is most generous.

Ideal Conversion to Mains AMPLE POWER "..... This unit forms an ideal power pack for incorporating in the design of a mains set or radio-gramophone, for there is ample power available to meet the requirements of the most ambitious design."

PRICES Model A.B.1.P. supplies up to 350 v. 80 m.amps. *Smoothed* High Tension, also 4v. 3a. C.T. Low Tension. PRICE **70/-** (less Valves)

Model A.B.2.B. supplies up to 500v. 120 m.amps. *Smoothed* High Tension, also 4v. 4-5a. C.T., 4v. 2a. C.T. Low Tension. PRICE **100/-** (less Valves)

[Note:—All components mounted on steel chassis, but unwired.]



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"BRYCE" Transformers, Chokes, Amplifiers, etc.

Send for Illustrated Lists.

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'Phone: 1251
Woodfield Works, BURY, Lancs.
London: WILBURN & CO., 23, Bride Lane, E.C.4

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For the convenience of private advertisers, letters may be addressed to numbers at "The Wireless World" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge, which must include the words Box 000, c/o "The Wireless World." All replies should be addressed to the Box number shown in the advertisement, c/o "The Wireless World," Dorset House, Tudor Street, London, E.C.4. *Readers who reply to Box No. advertisements are warned against sending remittance through the post except in registered envelopes; in all such cases the use of the Deposit System is recommended, and the envelope should be clearly marked "Deposit Department."*

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Readers who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Wireless World," both parties are advised of its receipt.

The time allowed for decision is three days, counting from receipt of goods, after which period, if buyer decides not to retain goods, they must be returned to sender. If a sale is effected, buyer instructs us to remit amount to seller, but if not, seller instructs us to return amount to depositor. Carriage is paid by the buyer, but in the event of no sale, and subject to there being no different arrangement between buyer and seller, each pays carriage one way. The seller takes the risk of loss or damage in transit, for which we take no responsibility. For all transactions up to £10, a deposit fee of 1/- is charged; on transactions over £10 and under £50, the fee is 2/6; over £50, 5/-. All deposit matters are dealt with at Dorset House, Tudor Street, London, E.C.4, and cheques and money orders should be made payable to Iliffe & Sons Limited.

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RECEIVERS FOR SALE.

HIRE a McMichael Duplex Portable; 15/- weekly, £2/12/6 monthly; amplifiers for dances, etc., on hire.—Alexander Black, Wireless Consultant, 55, Ebury St., S.W.1. Sloane 1655. [0328

KOLSTER BRANDES 6-valve Kolster Superhet, all waves, latest model; cost £24/17/6, will accept £17/10; 230 volt A.C. mains, used 3 months.—Ewbank, Carleton Park, Pontefract. [1682

AMATEUR Giving Up.—All guaranteed O.K.; B.T.H. special 50-watt amplifier outfit, with double turntables, R.K. speaker and motor generator, complete and working (cost £175), accept £12/10; Newco D.C. generator, 720 volts 140 milliamps., £2/5; Lewcos kit chassis, complete with 3 Cyldon A.C. or D.C., 17/6; Magnum short wave converter, 30/-; 250-watt modulator valve, 25/-; Watford alternator, 200 watts 20 volts, 500 cycles, 12/6; Cyldon 3-gang 0.0005, new, 9/-; R.I. automatic unearm, 4/-; lots of coils, condensers, resistances, 6-volt valves, switches, and parts, etc.; list willingly.—H. H. S. Harris, 80, Wardour St., W.1. Gerrard 2504. [1690

HAYNES Radio Single Dial Superhet Chassis, 200-50 A.C., choke substituted for speaker, 6 valves; cost 18 guineas, accept 13 guineas.—Freed, 5, Raphael Rd., Gravesend. [1688

MCMICHAEL D.C. Mains Moving Coil Receiver; cost 24 guineas in May, a bargain, £12; as new.—Ford, 35, Bedford Rd., Firswood, Chorlton-cum-Hardy, Manchester. [1681

RADIOGRAM, Ekco 1933 R.G.25 superhet, console, as brand new, guarantee, any trial; just cost £45; first £25.—Particulars Box 5963, c/o *The Wireless World*. [1698

PYE Twintriple, second-hand, new batteries, in perfect condition; 11 guineas.—Box 5964, c/o *The Wireless World*. [1699

ZEVAVOX 8-valve Superhet, automatic volume control; cost 25 guineas; purchased November; as new, half price.—Whittall, R.N. College, Dartmouth. [1702

MARCONI 42 4-valve A.C.; cost £21; 6 months ago; perfect, £12.—85, Balgreen Rd., Edinburgh. [1714

15 Watt Cinema Amplifier Chassis, 3 Ferranti meters and valves, for generator or battery supply; £6, or offer.—Watling, 15, Newburgh Rd., Acton, W.3. [1725

OSTAR-GANZ Combined A.C. and D.C. Receiver, in modern walnut cabinet, with Rola M.C. loudspeaker, unboxed, list price £12/12, our price, 2 valves £5; 3 valves £6/10; c.o.d., carriage paid; state voltage.—Kay, 167, City Rd., Finsbury, E.C.1. [1632

FOR Sale.—New Kolster Brand all-mains 200-250 A.C. S.G. det. pen.; £5.—S. S. Burchill, 32, Powis Sq., W.11. [1737

D.C. Gambrell 4-valve (new), 1931; listed £42, accept £18.—Monro, 24, Inverness Terrace, W.2. [1744

CHARGERS AND ELIMINATORS.

N.P.—Battery chargers for all A.C. mains, Westinghouse metal rectifiers; trade price; list 1933.

N.P.—2 to 10 amp. chargers, A.C. mains; from 75/- to £30.—See centre column.

N.P. for D.C. Charging Boards; from 25/-, with ammeter. etc.—Nash Products, Stechford, Birmingham. [1708

Chargers and Eliminators.—Contd.

BROWN and SALTER, Vortexion, Wimbledon, for the finest transformers made regardless of price; all models guaranteed 12 months, tested on full load and 2,000 volts between windings before despatch; all finished in cast aluminium frames or die-cast shroudings.

VORTEXION.—W5, 6 or 7 for Westinghouse H.T.5, 6, or 7, with 4v., 1.4a., C.T.; 11/6.

VORTEXION.—W8, 9 or 10 for Westinghouse H.T.8, 9 or 10, with 4v. 1-2a., C.T., 4v. 2-5a., C.T., tagged leads, shrouded; 16/6.

VORTEXION.—W11 for Westinghouse H.T.11, with 4v. 1-2, 4v. 1-6a, all C.T., shrouded; 40/-.

VORTEXION.—250-0-250, 60 m.a., 4v. 1-2, 4v. 2-4a., all C.T., open type tagged leads; 11/6.

VORTEXION.—350-0-350, 75 m.a., 4v. 1-2, 4v. 2-4a., all C.T., open type tagged leads; 13/6.

VORTEXION.—350-0-350, 120 m.a., 4v. 2-5, 4v 1-5, 4v. 2-4, all C.T., shrouded type tagged leads; 16/6.

VORTEXION.—400-0-400 or 450 or 500-0-500, 120 m.a., open type, 4v. 2-4a., 4v. 2-5a., 4v. 2-5a., all C.T.; 19/-; tagged leads.

VORTEXION.—500-0-500, 150 m.a., or 450-0-450, 160 m.a., or 400-0-400, 190 m.a., 4v. 2-5a., 4v. 4a., 4v. 2a., 4v 2a., 4v. 2a., all centre tapped, any input, 50 C., beautifully shrouded, core size, 2¼×3¼, screened primary and strips, a £5 model, 35/-.

VORTEXION Only Use Sankey Laminations, British Insulated Cables wire, and non-hygroscopic paper interleaving for 100% reliability and excellent regulation

VORTEXION.—30h. 50 m.a. chokes, 5/6; 20h. 120 m.a., 8/6; 15h. 350 m.a., excellent for rough D.C., shrouded, 15/-.

VORTEXION for Helsby Condensers, 750 D.C. working, 6 mfd.; 6/6, list price 21/6.

VORTEXION.—Transformers made to your specification.

VORTEXION.—Brown and Salter, 182, The Broadway, Wimbledon Tel.: Liberty 2814. [1743

O!!!!—Eliminators for the discriminating: no junk; guaranteed 2 years, incorporating Bryce, T.C.C., etc., material.

O!!!!—Model A, output, 120v. 20 m.a., 3 tappings, 32/6; valve or Westinghouse rectifier, 9/6 extra.

O!!!!—Model B, outputs 250v. 75 m.a., 4v. 3-5a., C.T., 37/6; valve, 9/6; or, complete with Westinghouse, on steel chassis, 57/6.

O!!!!—Model C, outputs 350v. 80 m.a., 4v. 3-5a., C.T., 47/6; valve, 9/6; or, complete with Westinghouse, 72/6; a beautiful chassis job.

O!!!!—Anything else to specification.—R. A. Arnell, 8, Fishponds Rd., Upper Tooting, S.W.17. Alight Mayfair Cinema. See last week's valves advertisement. [1713

TANTALUM for A.C. Chargers, H.T. and L.T.—Blackwell's Metallurgical Works, Ltd., Garston, Liverpool. [9346

AITKEN BROS. and Co., 7, Gallowgate, Newcastle-on-Tyne.—Makers of really good transformers and chokes. Finest Materials. Experienced Craftsmen. Guaranteed for two years. Quotation for one of any type or specification on application. Satisfaction guaranteed. Enquiries invited. [1691

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YOUR SET FITS HERE

Convert your existing Set to a Radiogram. This beautiful WALNUT Cabinet comes to you with vignetted front as illustrated and motor board, ready to take your own Set, Gramophone Motor and Pick-up. Presents the professionally finished appearance of the most luxurious Radio-Gramophone money can buy. *Takes panel* 18" × 8". *Baseboard*, 11" *Deep. Height*, 34".

1933 WALNUT ADAPTAGRAM

Cash or C.O.D. **63/-** or 3 3 Deposit and 11 monthly payments of 5 3. Carriage Paid. Baffle Board 1 9 8 extra.

Outfitting and Packing 2/6 extra.

MODEL "B"
With Garrard Double Spring Motor, B.T.H. Tone-Arm with Pick-up. Cash or C.O.D. **6** GNS. or 12 monthly payments of 12 -. Carriage Paid.

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With Collaro Electric Motor with Tone-Arm, Pick-up in one Unit. 12 in. Turntable. Cash or **7** GNS. or 12 C.O.D. monthly payments of 13 9. Carriage Paid.

GARRARD AUTOMATIC RECORD CHANGER MODEL

CASH or C.O.D. Carriage Paid.

As illustrated, and fitted with Garrard Record Changer Unit, complete with Motor, Pick-up, Tone Arm, etc. Plays pack of eight 10" or 12" records ..... or £3-13-0 Deposit and 11 monthly payments of 20 - **13** GNS

PETO-SCOTT CO. LTD. 77, City Road, London, E.C.1

Dear Sirs, Please send me CASH, C.O.D. or H.P.

1933 WALNUT ADAPTAGRAM

Model A 63 -
Model B 6 Guineas
Model C 7 Guineas
Model D 13 Guineas

for which I enclose £ s. d. Cash Deposit

Name .....

Address W.W.3 2 33

MADE IN OUR OWN FACTORY

CLIX

Specified

for the Q.P.P. GRAMOPHONE AMPLIFIER to ensure Perfect Contact.

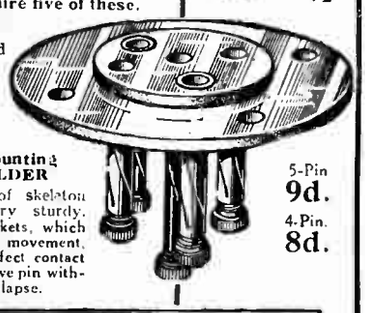
6d. Complete

CLIX ALL-IN TERMINAL
A very robust terminal which is *completely insulated* whether connected or disconnected, providing absolute protection from "shorts."
You require two of these.

1½d.

CLIX "MASTER" PLUG
Has positive metal-to-metal wiring. Non collapsible prongs, with curved ends for easy insertion, give firm grip and full contact with ANY battery socket.
You require five of these.

Recommended for the D.C. Amplifier.



Chassis Mounting VALVEHOLDER
Although of skeleton type, is very sturdy. Resilient Sockets, which have a lateral movement, guarantee perfect contact with ANY valve pin without fear of collapse.

5-Pin **9d.**
4-Pin. **8d.**

Cheapest PERFECT Contact

LECTRO LINX LTD., 79a, Rochester Row, S.W.1. *From all dealers*

Chargers and Eliminators.—Contd.

SERADEX All-British Radio Saves you Money.

D.C. Grano-amplifier, uses the following: 1 R.B.2 mains resistance, 3/6; 5 type B 1 mfd., 1/6 each; 3 type B 2 mfd., 2/3 each; 1 type B 4 mfd., 4/5; 2 M150 100 ohms resistors, 2 ditto 250 ohms, 1 ditto 1,000, 1 ditto 5,000, 1 ditto 50,000, 1 ditto 100,000, 8d. each (if wire-wound are preferred, use type G125); 2 type C.A. chokes, 12/6 each; price for complete kit, carriage paid, £2 10.

Q.P.P. Amplifier, uses 4 M150 resistances, at 8d., and 1 B 2 mfd., at 2/3.

SERADEX Glass-wound Resistors, see illustration on page 24; type G125 (1½ watt rating), 25 to 1,500 ohms, 9d.; 5,000 ohms, 1/-; 10,000 ohms, 1/3.

SERADEX Rectifying Units, see page 28, housed in attractive steel cases, complete with all condensers, etc., ready wired; ideal for converting sets to all mains.

SERADEX Battery Chargers, all models, suitable for mains 200 to 250v. A.C.; see page 22.

SERADEX M.R.151C, Westinghouse rectified, output 15 volts 1 amp., complete in case, with variable output, charge state meter incorporated; £3/12/6.

SERADEX M.R.6030 Battery Charger, output 60 volts 3 amps., Westinghouse rectified, complete with meter, in metal case; £14, 14; split outputs arranged if desired; many other models available between the above two; lists for stamp.

SERADEX Filter Condensers, "Practical Wireless" series; "A first class component . . . rating very accurate"; new illustrated list now ready.

SERADEX Type B Condensers, 400v. working, 1 mfd., 1/6; 2 mfd., 2/3; 4 mfd., 4/5; 4+4 mfd., 7/3; 8+8 mfd., 14/6.

SERADEX Resistors.—"Practical Wireless" reports: "A thoroughly reliable article"; new illustrated list now ready.

CARRIAGE Paid on all retail orders over £2.

TREVOR PEPPER, Wake Green Rd., Moseley, Birmingham. [1729

A.C. Charging Boards (bankrupt stock), output 40v. 6a., valve rectification; cost £25, £9/5.—Jersey, Cumnor Hill, Oxford. [1715

CABINETS.

CABINETS for Radiograms, mains or battery sets, loud-speakers, gramophones, etc., endless variety, lowest prices (no catalogues).

H. L. SMITH and Co. Ltd., 287-9, Edgware Rd., W., or at associated shops: Charles and Co., 27, Lewisham High Rd.; Burt and Co., 49, Broadway, Deptford; Wright and Co., 367, High St., Stratford; G. E. Smith, 25, Queen's Rd., Watford. [1664

RADIOGRAM Cabinets; fully illustrated list free; remarkable values.—Gilbert, Cabinet Maker, Swindon. [1686

DYNAMOS, ETC.

CONVERTER, 220 D.C. to 220 A.C., 150-200-watt, filter unit, silencing cabinet, good condition; state make and price.—Box 5977, c/o *The Wireless World*. [1738

LOUD-SPEAKERS.

B.T.H. R.K. Moving Coil Speakers, guaranteed new, unused, manufacturers' surplus, original price 6 guineas.

HIGHLY Sensitive and Wonderful Tone Response; will handle up to 10 watts output; available for 6v., 100v., 200v., 30/-; also A.C. models, £2/10.

CARRIAGE Paid, c.o.d., or cash with order; send for list of other unused bargains.—Seekamp, 46, Farringdon St., London, E.C.4. [1425

8½ IN. Epoch P.M. Moving Coil Speaker; 25/6.—Williams, Cracked Mile, Waltham Abbey. [1694

BRITISH Made Lumophone Moving-coil Speakers, Universal transformer, power or pentode; post free 19/6.—Newmans, 30, Hoylake Crescent, Uxbridge. [1747

LOUD Speakers.

USED for Test Purposes Only.—Rola M.C. types, K and F 6-volt, 2,500 ohm, 7,500 ohm, 17/6 each; Peter Graham M.C., 17/6 each; Marconi M.C., type 80, 17/6 each; Baker's M.C., in cabinet, 40/- each; B.T.H. R.K., P.M., 25/- each.—A. Davey, c/o "Tannoy Products," Dalton St., W. Norwood, S.E.27. [1745

30/- !!—B.T.H. R.K. moving coil speakers, 6in. cone, new and unused, guaranteed; these speakers are type as used in cinema sound equipment; weight 20lb., and are vastly superior to cheap speakers now on the market, 100 volts, 150 volts, and 200 volts D.C.

27/6 !!—6v. D.C. speaker, as above; £2/7/6, speaker as above, for 100-250 A.C.

16/6 !!—Eko pick-ups, complete with volume control and recording attachment, brand new and perfect; carriage paid, cash with order, or c.o.d.—Wood, 12, Tredegar Rd., Bow, E.3. [1741

TRANSMITTERS.

SERADEX S.V.M. Super Transformer, input 200 to 250v. 50C, outputs 1,000-0-1,000 at 80 mils, with L.T.s to order, £4/17/6; stripped type, £4/7/6; carriage paid; guaranteed two years; see Chargers column. [1732

PICTURE RECEIVER APPARATUS.

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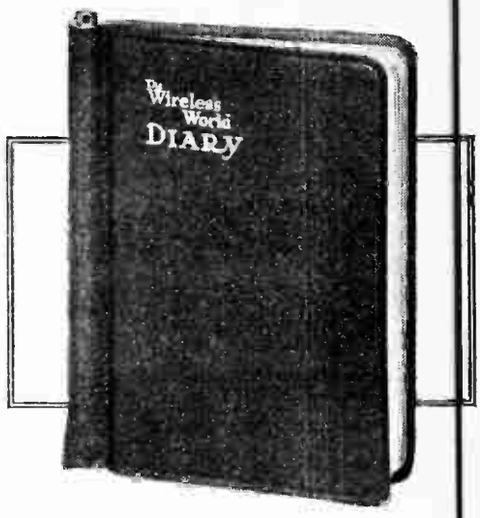

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R. [1718

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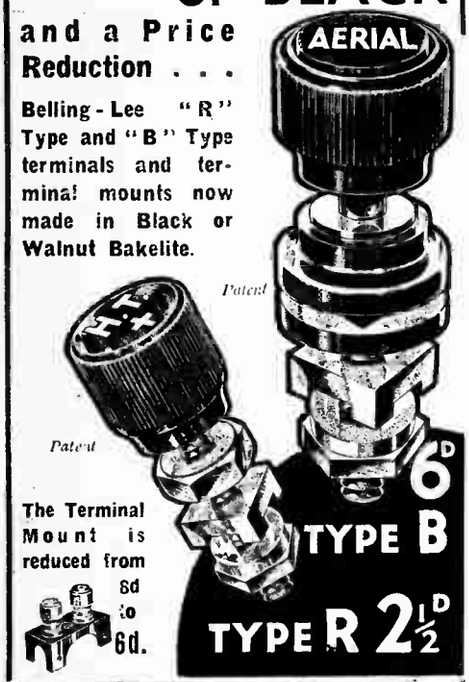

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EDISON BELL Wire Wound Clip-in Resistances, 10,000, 60,000, 70,000, 80,000, and 90,000 ohms; 1/3 each.

HEAVY Duty Variable Resistances (slider type), wound on porcelain, 200 ohms, 1 amp., 2/6; 350 ohms 1 amp., 2/6; 2,000 ohms ¼ amp., 5/-; 500 ohms ½ amp., 5/-; 50 ohms 2 amps., 2/6; B.T.H. electric gramophone motors, induction type, 100-250 volts, A.C., 30/- complete; double spring gramophone motors, complete 15/-, single spring 9/-; B.T.H. A.C. and D.C. motors, 55/-.

S. G. BROWN'S Microphone Amplifiers (Microbox); listed £5 5, our price 7/6.

CROYDON Rotary Converters, input 220 D.C., output 220 A.C, 160 v.a.; £4/10.

WESTERN ELECTRIC Public Address Speaker Horns, weatherproof, exponential, 7ft. long, bell 22×14, fit practically any unit, constructed of solid timber, weight 100lb.; 25/-, carriage forward.

(This advertisement continued on next page.)

KINVA RADIO PRODUCTS TRADE MARK

CHOKES
SLAB TYPE, LOW D.C.
0·1 to 0·3H, 3/6; 0·5, 4/6; 1·0, 5/9; 2·0H, 6/9
(Tappings Extra)

HETERODYNE WHISTLE FILTERS
TYPE "B.1," Adjustable Choke Filter, 7/-
TYPE "B," Adjustable, 7/6; "A," 12/-

SCREENED H.F. CHOKES
FAMOUS STANDARD TYPE, 2/9 POST
'MAJOR' TYPE for 'SUPERS,' 5/6 EXTRA
SHORT WAVE, UNSCREENED, 2/3 ALL ITEMS
List on Request.

POSTLETHWAITE BROS.
KINVER, STOURBRIDGE

Write for Illustrated Catalogue of
RADIO-GRAMOPHONE CABINETS
of exclusive modern design, made by craftsmen in highly figured Oak, Walnut or Mahogany, post free.
REMARKABLE VALUES.
Cabinets made to order a speciality.
Maker, under license, of the
HOWE BOX BAFFLE.
Recommended by the B.B.C. Full details on request.

GILBERT
Cabinet Maker - SWINDON
Estimates Free. Est. 1866

Famous Maker's Offer:

PIANO-TONE CABINETS
7 DAYS' FREE TRIAL
(OR 10/- MONTHLY).
Piano built (Pat. 8123), the acoustic tone brings a fine thrill (Piano Oak). *(Radio-Press, B.B.C., 3,000 clientele).*
At Maker's Prices, 35/- to £15.
LIST FREE.
Send for photographs, detail drawings.
Picketts Piano-Tone Cabinets, Albion Rd. (w.w.) Bexleyheath, Kent.

RYALLS RADIO,
33, CHANCERY LANE, LONDON, W.C.2, accept used radio parts, or sets, in part or full payment for brand new, at list prices. Only good quality components accepted, accumulators and very small items cannot be taken. Goods bought for cash from callers, up to one third of list price paid, parcels by post by arrangement only.

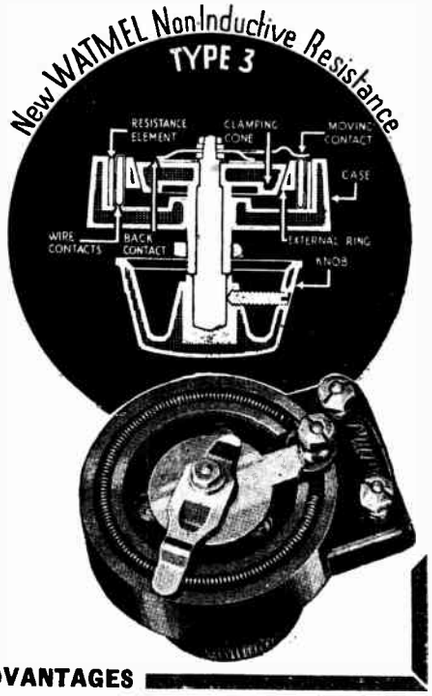
PARIMA SELENIUM CELLS
FOR ALL PURPOSES.
Parima Light-Sensitive Resistances are constant, mechanically strong, moisture proof and exceedingly sensitive. Fully guaranteed for 12 months. Prices from **5/-**
PARIMA MANUFACTURING CO.,
21, BROMLEY ROAD, S.E.6. *Hither Green 3629*

SERADEX
BATTERY CHARGER
Type V.R.328. Output 28 V. 1.3 amps.
Complete in case, with meter and variable resistance. Price **£3.5.0**
TREVOR PEPPER, Wake Green Rd., Birmingham

JUNIT
SYNCHRONOUS ELECTRIC CLOCKS
Write for the new Complete Catalogue including models to match Pye, Ultra, etc., radio receivers.
Junit Mfg. Co., Ltd., Junit Works, Steele Rd., Chiswick, London, W.4.

FOR VOLUME & TONE
IGRANIC
ALONE

BUY WATMEL THIS YEAR



ADVANTAGES

1. **NON-INDUCTIVE. This is because the resistance element is not wire.**
2. **Furthermore, the wire contacts shown make contact with the resistance element so that the moving contact does not wear out the element. This guarantees *even* and *true* contact always.**
3. **The extremely *firm* and *even* contact with the element. This is obtained by a new patented clamping cone, which directly it is screwed down forces the sprung external ring against the wire band. The pressure is so great that perfect all-round contact is made with the element which will not vary in any circumstances.**
4. **Self-cleaning wiping contacts. This ensures perfectly clean contact always.**
5. **Silent in operation.**
6. **PRICE 4/6**

We recommend this resistance (Type 3) only for values above 50,000 ohms where wire-wound potentiometers are not required. Patents for this new Resistance have been applied for. Type 1. Wire Wound, any value up to 50,000 ohms.

Write for Free Component Catalogue and also for our Free Calculation Resistance Chart.

If you have any difficulty in obtaining Watmel Components, WRITE DIRECT TO US.

TRADE ENQUIRIES INVITED

Watmel COMPONENTS

GET THE BEST OUT OF ANY SET

WATMEL WIRELESS CO. LTD.

Imperial Works, High Street, Edgware.

Telephone: Edgware 0323

Components, etc., for Sale.—Contd.

(This advertisement continued from previous page.)

EKCO Microphones, complete with transformer, a really fine job; 18/6.

S. G. BROWN'S Power Units, consisting of tapped mains transformer, Westinghouse rectifier, and T.C.C. electrolytic condenser, output 6v. 1 amp., for charging and energising; 21/-, listed £3/15.

WESTINGHOUSE Rectifiers, 120 volts at 20 m.a., 6/6; 180 volts at 30 m.a., 8/6; 8 volts at 0.5 amp., 6/6.

AMPLION Pick-up, with arm and volume control; 18/6; Clarostat wirewound potentiometer, 50,000 ohms, 2/6.

ALL the Following Lines 6d. Each, or 5/- dozen assorted: Trimming condensers; Mullard half-watt resistances, 60,000 and 16,000 ohms; vacuum resistances, 15,000 and 10,000 ohms; shielded S.G. or Pentode leads; Dubilier 0.01 condensers; 2 meg., 1 meg., ¼ meg. metallised resistances; 2ft. lengths of screened wire; 5-pin. valve holders; 4-pin valve holders; any size grid leaks and condensers; fuse tube with holder; Crabtree sunk 5-amp. switches.

FOR Callers Only. The following guaranteed valves at 60% of list price: M.P.Pen.; U.U.60/250; P.T.625; M.V.S.G.; A.C.Pen.; V.D.S.; U.U.120/350; D.H.A.C.P.; D.P.T.; S4V.A.; M.S.4B; A.C./S.G., A.C./H.L.; A.C.P.1; 304V.

ALL Orders to 20-22-24, High St, Clapham, S.W.4. Callers to High St., Clapham (Macaulay 2188). Closed 1 o'clock Wednesday. Open till 9 o'clock Saturday. Nearest Station Clapham North Underground. [1674

M. J. HOYNE for Power Transformers and Chokes.

250 0-250v. 60 m.a., 4v. 1-2a. C.T., 4v. 2-3a. C.T.; 10/-, post 9d.

350 0-350v. 70 m.a., 4v. 2a. C.T., 4v. 2-3a. C.T.; 12/6, post 1/-.

350 0-350v. 120 m.a., 4v. 2a. C.T., 4v. 4-6a. C.T., 4v. 1-2a., C.T.; 16/-, post 1/-.

450 0-450v. 150 m.a., 4v. 2-4a. C.T., 4v. 2-6a. C.T., 4v. 2a. C.T., 4v. 2a. C.T.; 25/-, post 1/3,

500 0-500v. 140 m.a., 4v. 2-4a. C.T., 4v. 2-6a. C.T., 4v. 2a. C.T., 4v. 2a. C.T., or 6v. windings if preferred; 27/6, post 1/3.

750 0-750v. 250 m.a., 4v. 4a. C.T. for G.U.1 and delay switch, 3 C.T. filament windings to specifications not to exceed 100 watts, 65/-, carriage 2/9.

WESTINGHOUSE Model 150, 200, 240v. 300 m.a., 4v. 2a., C.T., 4v. 2-6a. C.T., suitable for H.T.8, H.T.9, or H.T.10; 15/-, post 1/3.

LINE Transformers (auto wound), 0-100, 110, 200, 220, 240v. 60 watt, 7/9, post 1/-; 120 watt, 11/-, post 1/-; 180 watt, 15/-, post 1/3.

CHOKES, 30h. 150 m.a., 12/-, post 1/-; 20h. 120 m.a., 8/6, post 9d.; 30h. 60 m.a., 6/-, post 6d.; 30h. 30 m.a., 3/6, post 6d

CONDENSERS, resistances, M.C. speakers in stock; write your requirements for bargains.

ALL Transformers are Guaranteed for 12 Months, and made from the finest British made material, primaries, tapped and screened, clamped in aluminium frames and fitted with clearly marked terminal strips.

M. J. HOYNE for Better Transformers.

M. J. HOYNE, Offices and Works, 8a, Gladstone Rd., Wimbledon, S.W.19. Tel.: Liberty 3303. [1598

EVERYTHING for Movies and Talkies.—'Phone, write or, better still, call and inspect immense stock of bargains.

ILLUSTRA ENTERPRISES, 159, Wardour St., London, W.1. Tel.: 6889 Gerrard. [1621

VALVES at 3/- Each, used for testing purposes only. American types, 250, 281, 227.

L.S.5 Valves, used for experimental purposes, at 5/- each; and B.12 at 3/- each; the above valves are for callers only; Mullard P.M.24a valves, as new, used very slightly for experimental jobs only, 6/- each; Era American base mains S.G. valves, type 624, absolutely brand new and unused, 7/- each.

ROLA D.C. Moving Coil Speakers, 90-120-volt field, American model type K, one of the best reproducers yet made, field resistance 2,500 ohms, fitted with pentode output transformer, guaranteed brand new, every one boxed; 17/6 each

UTILITY 2-gang Condensers, air spaced type, 0.0005 each half, complete with external trimmer for front section, with knob concentric with tuning knob, inside trimmer for rear section, and including dise drive and drilling template, brand new, every one boxed and guaranteed unused, 11/6 each; Lowe vacuum type condensers and resistances, 10,000 ohms, 15,000 ohms, and 25,000 ohms, 0.0003 and 0.005 condensers, 3d. each, 2/- per dozen.

MERSHON Electrolytic Condensers, wet type, self sealing on short overload, capacity 8 plus 8 mfd., 450 volts working; a few left at 5/- each.

UTILITY Mite Drum Dials, complete with 0.0005 condenser, brand new and boxed; 2/6.

MAINS Transformers, input 100-240 volts A.C., a really sound job, manufacturer's type, outputs as follows, 350-0-350 volts 100 milliamps., 4 volts 4 amps. C.T., 4 volts 2-3 amps., 11/6 each; number two model, same input, outputs 350-0-350 volts 60 milliamps., 4 volts 4 amps. C.T., 4 volts 2-3 amps. C.T., 11/6 each; both models brand new and unused.

PICK-UPS Made by Edison Bell, brand new and boxed, a good sound job, giving excellent reproduction for 12/6 each.—Call or write without delay to Modern Radio, 25, York Terrace, Clapham, S.W.4. 'Phone your order to Macaulay 3409. [1721

TWO D.O.20, 2 U8, A.C./P, Colvern K.S.W. coil, Igranic S.W. choke, A3 rectifier, Parmeko L.T. smoothing choke, pick-up transformer; offers.—10, Juliet St., Ashington, Northumberland. [1683

To the TRADER

EVERY PART FOR LEONARD HEYS BLACKPOOL EVERY CIRCUIT

AFTER all, customers are only human and you cannot blame them for being impatient. All the more need for your keeping in touch with Faraday House. We buy boldly and carry enormous stocks. Give us the worry and detail work of filling your want lists—the inconvenience saved and promptness of delivery will allow you to devote your time to SELLING and your reputation for speedy service will develop your business.

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ACCUMULATORS & H.T. BATTERIES:
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CABINETS:
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COMPONENTS:
ALL STANDARD BRANDED LINES

EBONITE

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GRAMOPHONE MOTORS:
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KITS:
Cossor, Graham-Farish, Ferranti, Osram, Lissen, Lotus, Melody Ranger, R. for M., Ready Radio, Slektun, S.T. 300, S.T. 400, Telsen, etc. and for "Wireless World" and all other published circuits.

PICK-UPS:
All makes

RECEIVERS & RADIOGRAMS:
All standard makes

SPEAKERS:
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(All standard makes stocked)
Speaker Units
SpeakerChassis

TUNERS:
British General, Radiopak, Tonatuna, etc.

VALVES:
All BVA types:
Standard Micromesh and Tungsram

ACCESSORIES:
Aerial and earth equipment, wires and sundries

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MESSRS. LEONARD HEYS, FARADAY HOUSE, HENRY STREET, BLACKPOOL.

Dear Sir,

I am a bona-fide wireless dealer interested in your "DELIVERY BY RETURN" service (for cash with order or C.O.D.) upon all types and makes of radio components, accessories, etc.

Please send me, without obligation on my part, details of your service to the trade, together with order forms, etc.

Yours faithful'y,

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A Trade card or letter should accompany this coupon. (If 128-page catalogue required enclose 1/6.) Enquiries from persons not in the trade ignored.

Leonard Heys

LEONARD HEYS, (Wholesale Only) **FARADAY HOUSE,**
Henry Street, BLACKPOOL, Lancashire

Eleven years continuous experience in the Wireless Trade.

Stowe & Bowden

Handbook of Technical Instruction for Wireless Telegraphists. (Fourth Edition.) By post, 25/9.

SCOTT SESSIONS - -

Equipment for the "W.W."

Q.P.P. Battery Gramophone Amplifier

Described in this issue, supplied tested by Scott Sessions, including valves, royalty and complete assembly **PRICE £8.14.0**

D.C. Gramophone Amplifier

Completely assembled, and tested, including valves, royalty, etc. (as described in this issue). **PRICE £9.18.6**

QUIESCENT "Push-Pull" Battery Two

This popular new set, completely assembled inclusive of cabinet, valves, moving coil loud speaker, batteries and royalty (as described in the "Wireless World"—Jan. 20th). **PRICE £13.0.0**

Owing to the importance of the initial adjustments on the Sets, we have arranged for every Scott Sessions built "Q.P.P. Two" to be individually tested and adjusted by a Research Engineer, who has been engaged for some months solely on research in connection with this outstanding battery set development. No extra charge, of course!

For A.C. or D.C. users the W.W. Monodials assembled by Scott Sessions are still proving as reliable and popular as ever.

SCOTT SESSIONS & CO.
RADIO ENGINEERS,
MUSWELL HILL, LONDON, N.10
Telephone No. : Tudor 5326.

Contractors to H.M. Government Departments, Crown Agents for the Colonies, Electricity Corporations, etc.

THIS H.T. BATTERY LASTED 2½ YEARS

User Forgot He Had It

FREE BOOKLET TELLS ABOUT RADIO'S GREATEST ECONOMY

"I have had this battery in use 2½ years and it was so trouble free I forgot all about it, with rather disastrous results, there being only 30 volts left"—
C. H. P. (London).

Here's a man who thought it "disastrous" that his battery gave out! Of course, the STANDARD PERMANENT H.T. BATTERY needs attention occasionally, say every year or 18 months. But the replacement is merely a matter of changing cartridges at a few pence each—and you can do it yourself quite easily. Think of the money saved before and after. The STANDARD is a special adaptation of the famous Leclanché principle which recharges itself when the set is shut down, giving Level current and Better reception for much less money. We sell direct and Guarantee your satisfaction, whether you pay cash or deferred terms. Why not write now for our interesting Free Booklet.

Model H.5
126 VOLT STANDARD BATTERY
No. 3 size. 84 cells, 12,500 milliamp capacity.

Cash Price **37/8** or delivered on 1st payment of **5/-**

STANDARD BATTERY CO, (Dept. W.W.), 184-188, Shaftesbury Avenue, London, W.C.2.

Components, etc., for Sale.—Contd.

WEST END RADIO STORES for Genuine Wireless Bargains: Pye, L.F. chokes, 20 and 32 henries; 4/-.

EKCO Pick-ups, complete with volume control, etc., 15/-; heads only, 5 11.

SPEAKERS.—Blue Spot, 100U, boxed, 17/9; Helsby 8 Mfd., 500v., condls, tapped, 8/6; ditto, 4 Mfd., 4/11.

TRANSFORMERS for Mains.—Wearite 250-0-250v., 4v. 4a. 4v. 2a., 12 6; 350-0-350v., with L.T. tappings, 12/6.

ELECTROLYTIC T.C.C. Condensers, 2,000+2,000 mfd., 12v. peak, 4 9. Blue Spot wave traps, 3 11.

N. and K. Farrand Inductor Speakers, 35/-; S.G. Brown solo speakers, 18/9; list 39/6.

DUAL Gang British Condls, 0.0005, 5/6; Utility 0.0003 Bakelite reaction condls, 1 -. z

READY Radio Meteor, 3 kits, less valves, 35/-; Utility dual gang, 0.0005 condensers, with s./m., 12/6.

AMERICAN A.C. Valves, S.G., 7/6; Pentodes, 8/6; Eta 2v. H.F. valves 2 9.

DRUM Control Utility 0.0005 Condensers, 3/6; Frost 500,000 ohm volume controls 1/3.

INDUCTION Collaro Gramophone Motors for all voltages, with automatic stop, £3 model; 37/6.

ORMOND 0.01 Fixed Condensers, 6d.; postage extra on all goods.—West End Radio Stores 14, Lisle St., London, W.C.2, and at 382, Coldharbour Lane, Brixton, S.W.8. [1734

CONDENSER Blocks; 6d. per mfd., 650-volt test, in blocks of 6 mfd. upwards, wired in 2 mfd. unit; 2 years' guarantee; send by return of post on 7 days' approval; cash with order.—Butlers Radio, Ltd., 191, Forest Rd., Walthamstow, E.17. 'Phone: 3134. [0396

SETS.—"Wireless World" Everyman Four, with valves, complete, in cabinet, 40/- each.

CONDENSERS, used for test purposes only.—Plessey 3- and 4-gang super-het. condensers, 15/- and 20/- each; Utility 3-gang, with covers, 8 6 each, without covers 7 6 each; Jackson Bros., without covers, 3-gang, 10/6 each; 4-gang, 15/- each.

PICK-UPS, used for test purposes only.—B.T.H. Gilt (old type), 7 6 each; A.E.D., 10/6 each; Webster Gilt, 7 6 each; Amplion, nickel plated, type 150, 7/6 each; amp. meters, 1-0-1 charge and discharge, 2/9 each; R.C. units, Graham Farish, Edison-Swan, 2/6 each; Graham Farish, various resistances, 3d. each; holders, 2d. each; 2-pin plug-in coils, 6d. each; wave traps, B. & J., 3/6 each; Harlie, 2 6 each; "Tannoy" 3-valve sets (200-250v. and 110v.), complete with valves, £5 each.

D.C. Ekco H.T. Unit, 10/- each; A.C. Atlas H.T., L.T. and G.B. unit, 40/- each; "Tannoy" 16 C.H. units, metal case, list price (wet) £3/15, 30 - each, (dry) £4, 35/- each; "Tannoy" 16 C.H. (wet), wooden case, 25 - each; "Tannoy" 12 c. wet unit, in wooden case, 17 6 each; "Tannoy" 12 c. dry unit, in metal case, list price £2/17/6, 22/6 each; "Tannoy" D.C. unit, H.T. and L.T., in wooden case, 15 - each; "Tannoy" D.C. unit, H.T. only, 10/- each; "Tannoy" H.L.8 unit, wet, in wooden case, 45/- each, in metal case 50/- each; "Tannoy" H.L.1 unit, wet, in metal case, 50/- each, H.L.2 40/- each; various oak cabinets, suitable for 3v. sets, 3/6 each.—A. Davey, c/o "Tannoy Products," Dalton St., W. Norwood, S.E.27. [1746

MILDMAY RADIO EXCHANGE Offers.

FERRANTI M1 Speaker, P.M. £7/10 model, 55/-; M3 model, 35/-; Epoch model 66, P.M., listed £6/15, 50/-; G.E.C. inductor, 32/6; Lamplugh inducter, 27/6.

WESTON Moving Coil Meters, type 506, 0-300 m.a., 12/6; 0-10 volt, 0-20 amp., 10/- each; type 301, 0-8 volt, 20/-; 0-100 m.a., 20/-; Ferranti, 0-8 volt, 17/6; 0-500 m.a., 20/-; 15-0-15 amp., 14/-.

FERRANTI A.F.5C.C., 18/6; O.P.M.1C, 14/-; O.P.M.1, 10/-; O.P.1, O.P.2, 8/- each; Varley P.P. input, 14/-; A.F.5, 16/-.

PALLIARD A.C. Induction Motor, listed £4/19/6, 40/-; Diehl induction motors, listed £4/18/6, 35/- each.

LEWCOS Frame Aerials, 15/-; Varley S. peak coils, 7/6; Varley H.F. coils, 4/6; S.T.400 Colvern, 6/6 pair; Kingston home recorders, 10/- each; Celestion W5 pick-up, 27/6; Challis Monodial transformer, 20/-.—24, Mildmay Grove, Islington, N.1. [1720

SOUTHERN RADIO'S Guaranteed Wireless Bargains.—Mains transformers, fully tapped primary, 200-250v. 50 cycle centre tapped L.T., 250-0-250, 60 m.a., 4 volts 1 amp., 4 volts 3 amps., 11/- each; 350-0-350, 60 m.a., 4 volts 2 amps., 4 volts 4 amps., 13/- each; 350-0-350, 120 m.a., 4 volts 1 amp., 4 volts 2 amps., 4 volts 4 amps., 18 - each; 450-0-450, 120 m.a., 4 volts 2.5 amps., 4 volts 4 amps., 4 volts 2 amps., 19 6 each; 500-0-500, 120 m.a., 4 volts 2.5 amps., 4 volts 5 amps., 21/- each.

TRANSFORMERS for Eta, Lissen and Loewe rectifiers, 14/6; for Pix and Triotron, 12/6; for Westinghouse H.T.4, 5, 6, or 7, 12.6; for Westinghouse H.T.8 or 9, 14 6 each.

SMOOTHING Chokes—40 henries 40 m.a., 700 ohms, 6/6 each; 20 henries 60 m.a., 480 ohms, 7 9 each; 15 henries 100 m.a., 330 ohms, 8/9 each; 20 henries 120 m.a., 270 ohms, 9/3 each; pentode output choke, tapped, 1½, 2, and 3 to 1 ratios, 50 henries 30 m.a., 7/9 each.

ALL Transformers and Chokes Guaranteed for 12 months; special capacities quoted for and delivery given within 3 days from receipt of order.

SET Manufacturers' New Surplus.—Mullard Radio for Million A.C. 3-valve Kits, in sealed cartons, including 3 Mullard A.C. valves, £3/12/6 (list £6/10); Regentone 2-valve A.C. sets, in sealed cartons, complete with 2 Mullard valves and Westinghouse metal rectifier, £3/19/6 (list £6/10); Ready Radio 303 3-valve battery kits, complete with 3 Mullard valves, £2 (list £3/10), less valves, 22 6; S. G. Brown solo loud-speaker units, 3 9 (list 12 6), new, boxed, dual gang variable condensers, shielded and trimmers, 0.0005 (H.M.V.), 6/- each; screened chokes (H.M.V.), 1/- each, 9/- dozen; condensers, 4 mfd. 2/7, 2 mfd. 1/9, 1 mfd. 1/1 each, all 750 volt. (C.E.C.) D.C. moving coil speakers, 17/6 each; permanent magnets, 25/- each; every article guaranteed and carriage paid.—Southern Radio, 323, Euston Rd., London, N.W.1 (near Warren St. Tube). 'Phone: Museum 6324. [1716

RICH & BUNDY MAINS TRANSFORMER

(MODEL 44)
Recommended for the
'MODERN STRAIGHT FIVE'

POWER UNIT

PRIMARY UNIVERSAL VOLTAGE.
200-250 V. 40-100 cycles.
Other Voltages to Order.
SECONDARIES 400-0-400 120 m/a.
4V. C.T. 3½ amps.
4V. C.T. 6 ,,
4V. C.T. 2 ,,
Earthed Copper Electrostatic Screen over Primary

PRICE **62/6** Carriage Paid.

All RICH & BUNDY Mains Transformers for Radio are fitted with Screened Primary.

Manufactured by
RICH & BUNDY Ltd., Transformer Manufacturers,
NEW ROAD, PONDERS END, MIDDX. *'Phone: Enfield 0777.*
Sole Distributors I.F.S.—
KELLY & SHIEL Ltd., 47, Fleet St., Dublin, C.4.

When you incorporate a BURTON TRANSFORMER in your set you are using a component of the highest efficiency, which will reveal itself in the tonal purity and volume of your set.

Ask your dealer for BURTON.

Wound in ratios of 3-1 and 5-1.

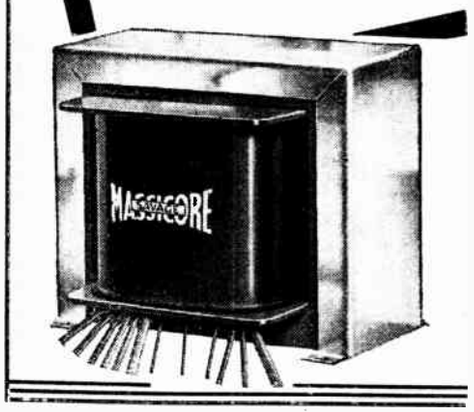
PRICE **5/9**

Made by
C. F. & H. BURTON, Walsall.

BUILD A BETTER SET WITH

BURTON COMPONENTS

MECHANICALLY SOUND ELECTRICALLY PERFECT



● Where reliability in a mains transformer is of first importance, there you will find Savage "Massicore" instruments, giving steady, efficient, trouble-free service. No unskilled, machine-dependent labour goes into their manufacture. Properly trained winders, using the finest tested materials, produce accurate interleaved layer windings which pass the most drastic tests successfully. So, you get transformers which combine up-to-date design with the best of workmanship — first-class instruments at everyday prices. Send to-day for price and specification list No. W.W.17.

Savage specialises in Mains Transformers Chokes and Condensers and PUBLIC ADDRESS AMPLIFIERS AND EQUIPMENT

SAVAGE
GUARANTEED MAINS EQUIPMENT
W. BRYAN SAVAGE
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Components, etc., for Sale.—Contd.

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APPLEBY, London.—Bargains, slightly used material to usual standard; prices quoted nett cash, carriage chargeable on orders under 20/- and bulky items; enquiries, stamp, please! Items are standard, in proper order, and not job line rejects.

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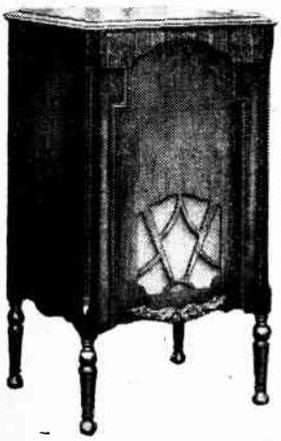

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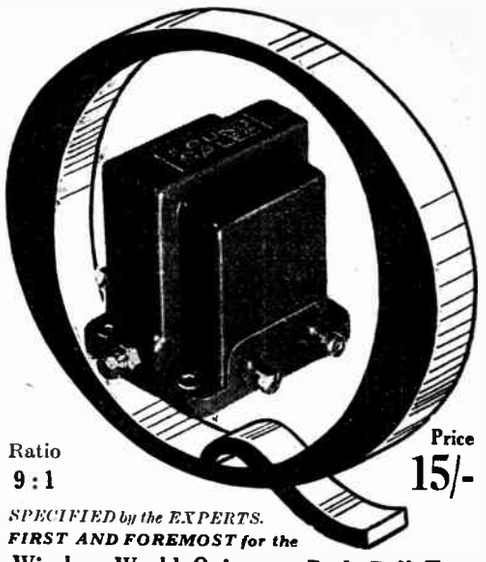

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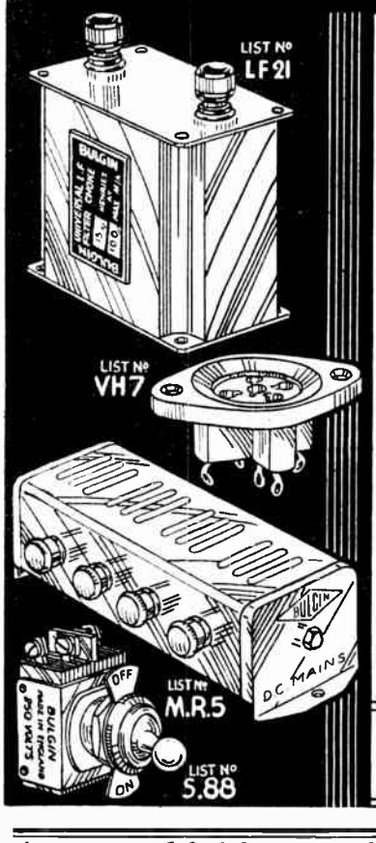

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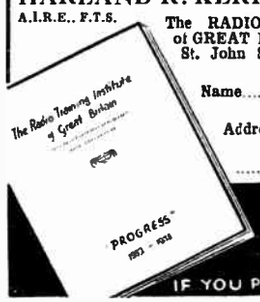

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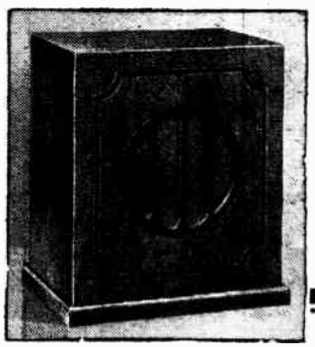

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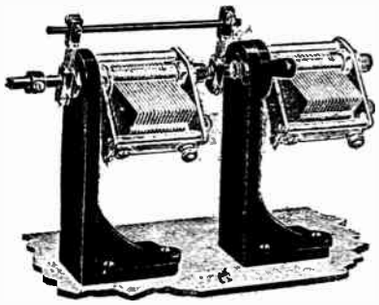

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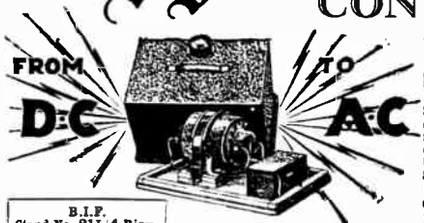

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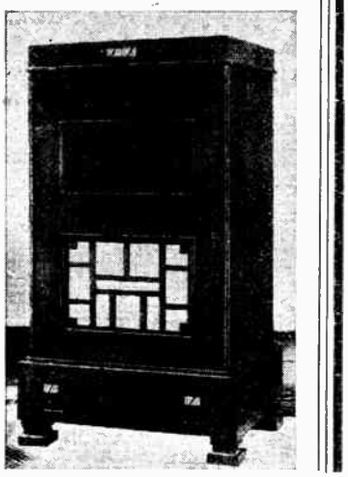

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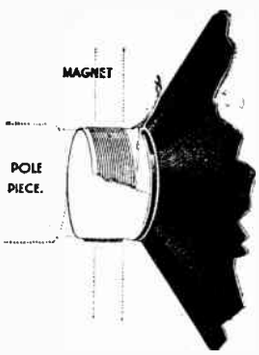

TECHNICAL TOPICS No. 3

SPEECH COIL MOUNTING

THIS talk is the third of a series on speaker technicalities and you are advised to cut each one out as it appears.

P.M. TYPES.

"DREADNOUGHT" Chassis Model (Complete with auxiliary baffle) **39/6**
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A Tribute from an Enthusiastic User.

Mr. John Tully, of 5, Brunswick Place, Aberdeen, writes us as follows :—

Dear Sir,—Some months ago I wrote you for details of your Ostar-Ganz valves, and after receiving your reply I purchased them at my local dealer, Mr. Laidlaw, Aberdeen. May I take this opportunity of expressing my appreciation of the results.

Frankly, I was sceptical of the results, but **the results have surpassed my expectations by a long way.** I built a detector L.F. receiver, 2 valves, intended for purely local reception, but was amazed to be able to log 18 stations of **real programme value**, the same evening that I completed the construction.

Hum from the mains is practically non-existent, even shorting out the chokes in the leads from the mains failing to bring about any appreciable mains hum. Yes, these valves are a success, and a big success at that. You are at liberty to make what use you care of this letter if you wish, as I think it is time the public should know that these valves are all they are claimed to be.

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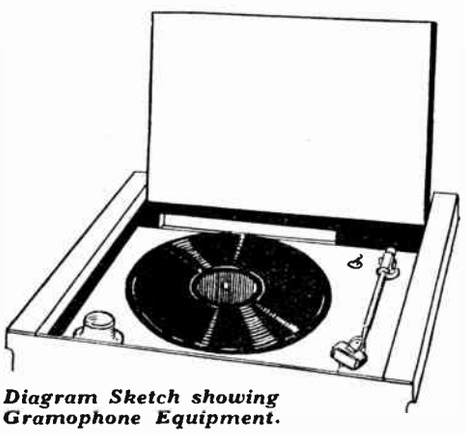
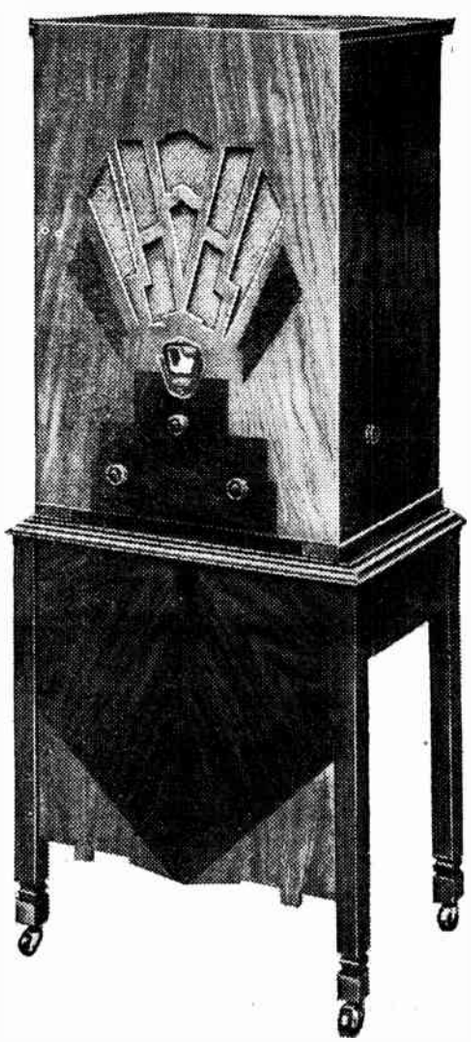


Diagram Sketch showing Gramophone Equipment.



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WEDNESDAY

FEBRUARY THE EIGHTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL	Orchestral concert, from Bournemouth. Professor H. J. Laski: "What is the State?" Symphony concert from Queen's Hall. "Strange Music."
LONDON REGIONAL	Ballad concert. Organ recital. Orchestral concert. Vaudeville programme. Instrumental concert.
MIDLAND REGIONAL	Organ recital. Military Band programme. From the Musical Comedies, orchestral concert.
NORTH REGIONAL	The Newcastle-upon-Tyne Bach Choir, relayed from the King's Hall, Armstrong College. Mr. W. Leonard Flinn: "Persia." "Beckside Chronicle No. 2," by Zachariah Briggus.
WEST REGIONAL	Orchestral concert from the National Museum of Wales. West Regional Sketches.
SCOTTISH REGIONAL	Band concert. "Bandit," a Holiday Adventure, written for broadcasting by Andrew Stewart.
BELFAST	Orchestral concert from Stranmillis.

ABROAD

BARI	Chamber music.
HEILSBERG	Opera: "Figaro," by Mozart.
LANGENBERG	Concert, conducted by Arnold Schönberg, relayed from London.
RADIO PARIS	The Lamoureux Concert Society. Conductor: Albert Wolff, relayed from the Salle Gaveau.
STRASBOURG	The Municipal Orchestra, conducted by P. Bastide, relayed from the Palais des Fêtes.

BARCELONA

RADIO-BARCELONA, Call EAJ1, 348.8 metres; 8 kW.—**6.0 p.m.,** Trio Concert. **7.0,** Request Gramophone Records. **7.30,** Exchange Quotations. **8.0.** Popular Music on Gramophone Records and News. **9.0,** Chimes from the Cathedral. Weather, Exchange Quotations, and Market Prices. **9.5,** Popular Concert by the Station Orchestra. **10.0,** La Cren de la Masia—Three-Act Play in Catalan (Soler). **11.0** (in an interval), News Bulletin. **12 Midnight** (approx.), Close Down.

BARI

269.8 metres; 20 kW. **7.0 p.m.,** Agricultural Notes, Tourist Report, and Announcements. **7.20,** Giornale Radio and Weather. **7.30,** Time and Announcements. **7.35** (approx.), Chamber Music Concert. Soloists: Nina Locuoco (Pianoforte), Maria de Santis Bruno (Soprano), and Nilde Pignatelli (Violin). Overture. Medea (Cherubini). Pianoforte Solos (Martucci): (a) Capriccio, (b) Scherzo. Soprano Solos: (a) Ninna nanna (Pesce), (b) Van gli effluvi delle rose (Casavola). Violin Solos: (a) Air on the Fourth String (Bach-Wilhelmy), (b) La fille aux cheveux de lin (Debussy-Hartmann). Pianoforte Solos: (a) The Great Gate of Kiev (Mussorgsky), (b) Prelude in G Minor (Rachmaninov). Soprano Solo: Bella di sapone (C. Franco). Violin Solo: Tambourin chinois (Kreisler); Jubel-ouvertüre (Weber). Pianoforte Solos (Sgambati): (a) Gavotte and Musette, (b) Concert Etude. Soprano Solo: La sera (Casavola). Violin Solo: Concerto in D Minor (Wieniawski). Soprano Solos: (a) Chivoul comprar la bella calandrina (Jommelli), (b) Vergebliches Ständchen (Brahms); St. François de Paul (Liszt). In the Interval, Literary Review. **9.30,** Dance Music on Gramophone Records. **9.55,** News.

BASLE.—See **Schweizerischer Landessender.**

BELGRADE

430.4 metres; 2.5 kW.—**3.0 p.m.,** Recital of Yugoslav Songs. **3.30,** Gramophone Records of Light Music. **4.0,** Medical Talk. **5.55,** Time and Programme Announcements. **6.0,** Talk. **6.30,** Gramophone Records of Variety Music. **7.0,** Pianoforte Recital by Frau Dokic-Djurkovic: Prelude and Fugue (Bach); Theme with Variations in A (Mozart); Waltzes Nos. 7 and 6 (Chopin); Nocturne in F Minor (Chopin); Etude (Chopin); Theme variée (Padervsky); Dance (Grgosevic). **7.30,** A Radio Play. **8.0,** Orchestral Concert: Overture, Sakuntala (Goldmark); Selection from André Chénier (Giordano); Hymn to St. Cecilia (Gounod); Ballet Music from Lakmé (Delibes). **8.50,** News, followed by Dance Music Relay.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—**11.55 a.m.,** Nauen Time Signal. **12.35 p.m.,** News Bulletin. **1.0,** Gramophone Concert of Sound Film Music relayed from **Berlin (Witzleben).** **2.0,** Agricultural Talk. **2.30,** Weather and Exchange. **2.45,** Reading (Ricarda Huch). **3.0,** Health Talk. **3.30,** See **Hamburg.** **4.10,** Legal Talk. **4.30,** Talk: Shakespeare and Politics. **5.0,** Recital of German Eighteenth-century Songs by Telemann, Zelter, Reichart, Johann Peter, Abraham Schulz and others. **5.25,** Topical Talk. **5.40,** Wireless Technical Talk. **5.55,** Weather and Announcements. **6.0,** French Lesson. **6.30,** A Poem. **6.35,** Concert of Light Music from the Traube Weinrestaurant. **7.0,** Coriolanus—Drama (Shakespeare)—Translation by Hans Rothe, with Music by Paul Höffer. **8.30,** Programme to be announced. **9.0,** Weather, News, and Sports Notes. **9.45,** Weather Report for Shipping, followed by Dance Music, relayed from **London.** **11.30** (approx.), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—**5.5 p.m.,** Violin Recital by Elisabeth Bischoff and Udo Dammert. Romance in G (Reger); Sonata in A (Mozart). **5.30,** Heinz Steguweit reads from his own Works. **5.55,** The Witzleben Station informs its Listeners. . . . **6.0,** Topical Talk. **6.10,** Programme for Children. **6.30,** Concert of American Music by the Station Orchestra, conducted by Dr. Howard Hanson. Symphonic Poem, Pan and the Priest (Hanson); Natchez on the Hill (Powell); Money Music (Sowerby); Scherzo from the Afro-American Symphony (William Grant Still). **6.55,** Concert of Rondos by the Station Orchestra, conducted by Fritz Redl. **8.0,** Behind the Scenes. At the Opera, the Winter Garden, the Films, and an Exhibition—a Radio Report. **9.0,** Weather, News, and Sports Notes. **9.15,** Relay of the Ball of the National Aviation Sports Club from the Kroll Festsalen. **11.0** (approx.), Close Down.

BERNE.—See **Schweizerischer Landessender.**

BEROMUNSTER. — See **Schweizerischer Landessender.**

BODEN.—See **Stockholm.**

BODO.—See **Oslo.**

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—**7.30 p.m.,** News and Market Prices. **7.40,** Dramatic Criticisms. **7.55,** Lottery Results. **8.0,** Agricultural Talk. **8.15,** News Bulletin and Weather Forecast. **8.30,** Programme to be announced. After the Programme, Entertainments Guide and Time Signal.

BRATISLAVA

279 metres; 11 kW.—**5.0 p.m.,** Hungarian Transmission: Talk, a Sketch, and Songs by E. Reichnitzova. **6.0,** See **Prague.** **6.20,** See **Brno.** **8.15,** Concert of Light Music by the Station Orchestra. **9.0,** See **Prague.** **9.15** (approx.), Close Down.

BREMEN.—See **Hamburg.**

BRESLAU

325 metres; 60 kW., and **GLEIWITZ, 253 metres. 12.5 p.m.,** Weather for Farmers. **12.7,** Gramophone Concert: Introduction to Fervaal (V. d'Indy); Intermezzo from Naïla (Delibes); Abendlied (Schumann); Après un rêve (Fauré); Prelude to Mona Lisa (Schillings); Two Songs without Words (Mendelssohn): (a) Spring Song, (b) The Bees' Wedding; Siegfried's Rhine Journey from The Twilight of the Gods (Wagner); War March of the Priests from Athalie (Mendelssohn). **12.45,** Time, Weather, News and Exchange. **1.5,** Light Music on Gramophone Records. **1.45,** Sponsored Programme with Gramophone Records. **2.10,** Agricultural Prices. **3.0,** Talk: Unfamiliar Figures of German Literature. **3.30,** Schumann Duets by Käthe Prochaska (Soprano) and Adelheid Prochaska (Contralto); Ländliches Lied; Wenn ich ein Vöglein wär, Herbstlied; Schön Blümelein; Erste Begegnung; Liebesgram; Botschaft; Die Schwalben; Mailied; An die Nachtigall; An den Abendstern; Zwischen grünen Bäumen; Sommerruh; Eingedeckt mich mit Blumen. **4.0,** Review of Books on South America. **4.15,** Talk: The Care of the Feet. **4.40,** Agricultural Prices. **4.45,** Serenade No. 11 for Two Oboes, Two Clarinets, Two Horns and Two Bassoons (Mozart). **5.10,** Talk: Discipline in Education. **5.30,** Orchestral Concert, conducted by Erich Peter: Overture, Oberon (Weber); Selection from Undine (Lortzing); Schallwellen-Walzer (Joh. Strauss); Selection from Othello (Verdi); Entry March from The Queen of Sheba (Gounod). **6.30,** Weather for Farmers. **6.32,** Talk for Veterinary Surgeons. **7.0,** Es gieht im!—Radio Cantata in Silesian Dialect (Kaergel-Voelkel). **8.0,** News. **8.10,** Cabaret on Gramophone Records. **9.10,** Time, Weather, News, Sports Notes and Programme Announcements. **9.30,** Dance Music from **Berlin (Witzleben).** **10.50,** Dance Music from the Kit-Cat, London. **12 Midnight,** Close Down.

BRNO

342 metres; 35 kW.—**4.10 p.m.,** Marionnette Play. **5.5,** Review of Periodicals. **5.15,** Talk for Workers. **5.25,** German Transmission: News and Two Talks. **6.0,** See **Prague.** **6.20,** Introductory Talk to the following Transmission. **6.30,** Salome—One-Act Opera (Richard Strauss), relayed from the National Theatre. **8.15,** See **Bratislava.** **9.0,** See **Prague.** **9.15** (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—**12 Noon,** Gramophone Concert: March (Mees); Slav Dance No. 2 (Dvorák-Kreisler); Si tu le veux (Koechlin-de Marsan); Sevilla (Albéniz); Russian Gipsy Melody; Mazurka Fantasia, Les deux virtuoses (de Nattes); Polka (Petit); Air from The Fair at Sorochinsk (Mussorgsky); Spanish Dance, No. 4 (Sarasate); Danse des plébéiens (Maquet); Dolly (Fauré); Funeral March of a Marionette (Gounod); Liebestraum (Liszt); Nocturne from La Navarraise (Massenet); Military March (Saint-Saëns). **1.0 p.m.,** Le Journal Parlé. **1.10,** Concert, conducted by Paul Moreaux, relayed from the Membre Hall, **Antwerp.** **5.0,** Concert by Mickey's Club Jazz Attraction. **6.0,** Talk on the Belgian Chamber of Commerce. **6.15,** Schubert Song Recital by M. F. Anspach (Tenor): Gute Nacht; Der Schmer; Der Lindenbaum; Wasserflut; Frühlingstraum; Die Post; Das Wirtshaus; Ständchen; Die Forelle. **6.45,** Talk: How to write a Radio Sketch. **7.0,** Gramophone Concert: Rhapsody for Clarinet and Orchestra (Debussy); Suite, Op. 11 (Feinberg); 'Cello Solo: Après un rêve (Fauré). **7.15,** Talk: The Belgian Congo. **7.30,** Medical Talk. **8.0,** La Chimère—Musical Play (Lionel Wiener), by the Station Orchestra and Soloists. In the Interval at **8.45,** Answers to Correspondence. **10.0,** Le Journal Parlé. **10.10,** Concert by the Max Alexys Orchestra, relayed from the Ancienne Belgique. **11.0** (approx.), Close Down.

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW.—Programme in Flemish. **12 Noon,** Orchestral Concert, relayed from the Membre Hall **Antwerp.** **1.0 p.m.,** Le Journal Parlé. **1.10,** Gramophone Concert: March (Verhaegen); 'Cello Solo: Moment musical (Schubert); Selection from The Gipsy Princess (Kálmán); Air from Martha (Flotow); Selection from The Bayadere (Kálmán); The Flower Song from Carmen (Bizet); Caprice for Clarinet (Mayeur); Selection from Piccolino (Guirand); Overture, Lakmé (Delibes); Londonderry Air (Kreisler); Souvenir des bois d'Avron-la-Chateauvert; Waltz. Quand l'amour meurt (Crémieux); March (Vandenbroncke). **5.0,** Gramophone Records: Symphony No. 4 (Beethoven); Sarabande et Tambourin (Leclair-Sarasate); La Nuit ensorcée (Chopin-Aubert). **6.0,** Violin Recital by Marcel Bady: Chanson triste (Tchaikovsky); Ley'me plorer (Defréchaux); Ik ken een lied (Denod); Plainte d'une poupée (C. Franck). **6.15,** Protestant Address. **6.30,** Chamber Music: Sonate à trois (Loeillet); Trio (Arensky). **7.15,** Talk: Young People and Maurits Sabbe. **7.30,** Theatre Review. **8.0,** Gramophone Records: Souvenir (Lübke); Victoria Regia (Klinnecke); Spanish Waltz, Mia Bella (Sommerfeld); Lotus Flowers (Ohlsen); Gallop, Derby (Sommerfeld). **8.15,** Programme dedicated to Maurits Sabbe; Talk on Maurits Sabbe; An Interview with Maurits Sabbe; Recitations from Maurits Sabbe's Vurige Tongen. **9.0,** See **Paris (Radio Paris).** **10.0** (in the interval), Le Journal Parlé.

BUCHAREST

394 metres; 12 kW. **4.0 p.m.,** Concert by the Station Orchestra: March (Wagner); Overture, Die schöne Galathée (Suppé); Waltz, Accelerationen (Johann Strauss); Selection from The Circus Princess (Kálmán); Selection from La Bohème (Puccini). **5.0,** News and Time Signal. **5.10,** Talk. **5.25,** Concert by the Station Orchestra (contd.): Intermezzo (Hartuny); Waltz (Zimmer); Violin Solo: Souvenir de Moscou (Wieniavsky). **6.0,** Talk on Romania: Her Vineyards. **6.40,** Popular Music on Gramophone Records. **7.0,** Time Signal. **7.2,** Violin Recital by Mme. Bartfeld: Sonata in C Minor (Grieg); Caprice viennois (Kreisler); Yota Navarra (Sarasate). **7.30,** Talk. **7.45,** Pianoforte Recital by M. Stein; Impromptu in G Sharp (Schubert); Two Preludes (Chopin); Melody (Chopin-Liszt); Shakespearean Serenade (Liszt-Schubert); Souhait d'une jeune fille (Strauss-Tausgi); Cordoba (Albéniz). **8.15,** Orchestral Concert, relayed from the Enescu Restaurant. **9.0,** News.

BUDAPEST

550 metres; 18.5 kW.—Programme also relayed on **240 metres** from **7.15 to 11.0 p.m.**—**4.0 p.m.,** Orchestral Concert, conducted by Bela Nagypal. Overture, Turandot (Lachner); Italian Suite, No. 1 (Beece); Selection from Carmen (Bizet); Waltz (Kálmán); Selection from The Rose of Stamboul (Fall); Badacsonyer Weinlese (Nagypal). **5.15,** Italian Lesson. **5.45,** Concert by the Misi Vörös Cigány Band. **6.45,** Talk for Workers. **7.15,** Mass in C Minor (Mozart), relayed from the Academy of Music. **9.15,** News. **9.30** (approx.), Popular Music on Gramophone Records. **11.0** (approx.), Close Down.

CASSEL.—See **Frankfurt.**

COPENHAGEN

261 metres; 0.75 kW.; and **KALUNDBORG, 1,153 metres;** 7.5 kW.—**11.0 a.m.,** Time Signal and Chimes from the Town Hall. **11.2,** Concert by the A. Bendix String Ensemble, relayed from the Wivex Restaurant. **1.0 to 2.0 p.m.,** Interval. **2.0,** Concert by the Station Orchestra, conducted by Emil Reesen: Overture, Sargino (Paër); Two Movements from the Serenade for Strings (Tchaikovsky); Waltz from Manon (Massenet); Pastorale in Three Movements (Palmgren); Coronation March from The Maid of Orleans (Södermann); Overture, Les Saltimbanques (Ganne); Wedding Waltz from The Veil of Pierrette (Dohnányi); Selection from La Bohème (Puccini); Piece en Forme de Habanera (Ravel); Scherzo in B Flat (Schubert); Overture, The Daughter of the Regiment (Donizetti). In the interval at **2.45** (approx.), Talk for Women. **4.0,** Gramophone Concert: Frank Titterton: Aria from The Messiah (Handel); Elisabeth Ohms: Senta's Ballad from The Flying Dutchman (Wagner); Jussi Björling: Gondola Song (de Curtis) Pablo Casals: Nocturne in E Flat (Chopin-Popper); Gittar Alpar and Hans Rehmann: Duet, Wenn du liebst dann scheint die Sonne from Katharina (Steffan); George Buck: Happy is the Corpse that the Sun shines on (Clifford and Cliffe); Stuart Ross and Joe Sargent: What a Lady Josephine must have been (Pola). **4.40,** Exchange and Fish Market Prices. **4.50,** Agricultural Talk. **5.20,** French Lesson. **5.50,** Weather. **6.0,** News. **6.15,** Time Signal. **6.30,** Talk: Great Philosophers—Hegel and Marx. **7.0,** Time Signal from the Town Hall. **7.1,** String Quartet in E Flat, Op. 74 (Beethoven). **7.40,** Talk. **8.10 to 1.0 a.m. (Thursday).** Radio Ball for Young People. **8.10,** Dance Music by Louis Preil's Dance Band. Vocal Refrains by V. Davids. In the interval at **9.0,** News. **10.15,** Dance Music by the Valencia Band, conducted by Aage Juhl-Thomsen. **11.0,** Time Signal and Chimes from the Town Hall. **11.2,** Dance Music from the Ritz Restaurant. **12 Midnight,** Dance Music from the Nimb Restaurant. **1.0 a.m. (Thursday).** Close Down.

CORK.—See **Dublin.**

DANZIG.—See **Heilsberg.**

DRESDEN.—See **Leipzig.**

DUBLIN

Call 2RN, 413 metres; 1.2 kW.; and **CORK, 224.4 metres.**—**1.30 to 2.0 p.m.,** Time Signal, Weather Report, Stock Report, and Light Music on Gramophone Records. **6.0,** Gramophone Concert of Popular Music. **6.15,** Programme for Children. **7.0,** Light Music on Gramophone Records. **7.20,** News Bulletin. **7.30,** Time Signal. **7.31,** Gaelic Talk. **7.45,** German Lesson. **8.0,** A Relay. **9.0,** Song Recital by Mrs. A. Hughes (Contralto). **9.15,** The Station Orchestra. **9.45,** Baritone Solos by A. O'Farrell. **10.5,** The Station Orchestra. **10.30,** Time Signal, News, Weather Report, and Close Down.

FECAMP

223 metres; 10 kW.—**6.0 to 7.0 p.m.,** Programme in English by the I.B.C. Concert: Part I.—Organ Solos: Home (Steeden); On Wings of Song (Mendelssohn); Trees (Kilmer); Roses of Picardy (Haydn Wood); Less than the Dust (Woodforde-Finden); There is Nothing New in Love (Maclean); Temple Bells (Woodforde-Finden); The Butterfly Waltz (Ralton). Part II—Light Music: Tiger Rag; Hot and Anxious; You Rascal, you; Sweet Sue; How'm I doin'; Clarinet Marmalade; Try getting a good Night's Sleep; I got Rhythm. **10.0** till Close Down, Programme in English by the I.B.C. **10.0,** Dance Music: On a little Balcony in Spain; Belle of Barcelona, The One Man Band; Fiesta; How's your Uncle? Carolina Moon; Pardon, Madame; I'd like to find the Guy that wrote the Stein Song; Bathing in the Sunshine; Whistling in the Dark; Choo Choo; You're twice as nice as that Girl in my Dreams; Sweet and Lovely; How about me; Goodnight; Let's have a Sing-Song. **11.0,** Song Recital: Boots (McCall); Song of the Flea (Mussorgsky); The Smuggler's Song (Mortimer); Vulcan's Song (Gounod); The Gay Highway (Drummond); The Admiral's Broom (Bevan); The Yeoman's Wedding (Poniatovsky); In Cellar cool (Traditional). **11.30,** Orchestral Concert: The Bumble Bee's Wedding (Clare); Selection from Die Fledermaus (Joh. Strauss); Columbine (Garland); Bells across the Meadow (Ketelbey); Waldteufel Memories (arr. Finck); Devotion (Ketelbey). **12 Midnight,** Banjo and Song Recital. Banjo Solo: Cracker Jack (Roser); Songs: (a) Exactly like you (Fields), (b) I like to do Things for you (Yellen), (c) More than you know (Youmans), (d) My Lover (Yellen).; Banjo Solo: Flapperette (Greer); Songs: (a) Swingin' in a Hammock (Seymour), (b) On the Sunny Side of the Street. **12.30 a.m. (Thursday),** Concert: Selection from Princess Pat (Herbert). Organ Solo: Londonderry Air (Traditional). Selection from The Student Prince (Romberg). Vocal Trio: Me minus you. Song: My little Irish Cottage (Summers). Orchestra: Old Spanish Song. Vocal Quartet: Leave the Pretty Girls alone (Robison). Waltzes from A Waltz Dream (O. Straus). **1.0,** Variety Concert: Sing Holly, go whistle, Hey Hey; Call me Darling; Topsy Turvey Talk; Marta; Bed; My Hiking Girl; The Scotch Italian Christening; Round the Marble Arch. **1.30,** Hawaiian Duets. Hawaiian Waltzes; Alma Mia (Whidden); Sing Something Simple; Goodnight Sweetheart (Noble); Bone Festa (Traditional); Three little Words (Check); O sole mio (di Capua); Hawaiian Medley. **2.0,** Dance Music; Lovable; Put that Sun back in the Sky; When we're alone; Where's Bill Bailey? Sailing on the Robert E. Lee; There's another Empty Saddle; Gettin' Sentimental; Can't we talk it over? Bahama Mama; Moon; If you were only mine; Let's put out the Lights; Moonlight, the Danube and you; Mad about the Boy; You're my Everything; The Younger Generation. **2.57,** I.B.C., Goodnight Melody. **3.0,** Close Down.

FLENSBURG.—See **Hamburg.**

FLORENCE.—See **Turin.**

FRANKFURT

259 metres; 17 kW., and **CASSEL, 245.9 metres.**—**4.0 p.m.,** Concert. **5.15,** Economic Notes. **5.20,** Talk: The Airs of the Workers' Radio Society. **5.50,** Topical Talk. **6.15,** Time, Programme Announcements, Weather and Economic Notes. **6.20,** Mandoline Concert: Eröffnungs-Festmarsch (Fries); Paraphrase on the Song, Das Bild der Rose (Ritter); Märchen-Ouverture (Eilender); Nachtfalter (Mandt); Paraphrase on the Song, Aennchen von Tharau (Schanne); March, Alte Kameraden (Teike). **6.45,** Radio Report on the Third Day of the International Ski-ing Championships in Innsbruck). **7.0,** See **Munich. 8.0,** The Ebernburg—Radio Sequence (R. Piper). **9.0,** Time, News, Weather and Sports Notes. **9.20,** A Marionette Play. **9.50,** Concert by the Station Orchestra. Soloist: Max Strub (Violin). Part I. Conductor: Hans Rosbaud. Overture, Die Heimkehr aus der Fremde, Op. 89 (Mendelssohn); Violin Concerto No. 7 in E Minor (Spohr); Symphonic Poem, Von der Wiege bis zum Grabe (Liszt). Part II. Conductor: Walter Caspar. Old Dance Music. **11.0** (approx.), Close Down.

FREDRIKSSTAD.—See **Oslo.**

FREIBURG.—See **Stuttgart.**

GENEVA.—See **Radio-Suisse Romande.**

GENOA.—See **Turin.**

GLEIWITZ.—See **Breslau.**

GOTEBDRG.—See **Stockholm.**

GRAZ.—See **Vienna.**

HAMAR.—See **Oslo.**

HAMBURG

Call ha (in Morse), **372 metres;** 1.5 kW. Relayed by **Bremen, 269.8 metres; Flensburg, 227.4 metres; Hanover, 566 metres;** and **Kiel, 232.2 metres.**—**3.30 p.m.** (from **Flensburg**), Concert by the Municipal Orchestra, conducted by Kurt Barth: Prelude to the Third Act of Kunihild (Cyril Kistler); Pusztа-Ritt (Hagspiel); Selection from The Trumpeter of Sackingen (Nessler); Two Hungarian Dances, Nos. 1 and 2 (Brahms); Dream Waltz from Der Feldprediger (Millöcker); Gallop, Die Höllenjagd (Kölling). **4.30,** Talk: The Middle-Class Household in Northern Germany. **4.55,** Concert of Revue Music by the Norag Chamber Orchestra, conducted by Gerhard Maasz, Erna Kroll-Lange, Bernhard Jakschtat, Gertrud Schnitzer, Erwin Bolt, and the Norag Choir. **5.50,** Exchange and Market Prices. **6.0** (from **Hanover**), Talk: Is an Alteration of the Trade Laws necessary and practicable? **6.25,** Weather Report. **6.30** (from **Bremen**), Pianoforte Miniatures of the Germaa Romantic Period—by Hanna Arens. Kinderszenen (Schumann); from the Deutsche Reigen und Romanzen (Joseph Haas). **7.0,** See **Munich. 8.20,** Programme in North German Dialect—Three Poets and a Musician, by a Choir and Richard Germer (Songs to the Lute). **9.20,** News Bulletin. **9.40,** Topical Talk. **9.50,** Concert from the Alsterpavillon. **10.20** (in an interval), Ice Report.

HANOVER.—See **Hamburg.**

HEILSBERG

276.5 metres; 60 kW.; and **DANZIG, 453.2 metres.**—**12.5 p.m.,** Concert by the Little Orag Orchestra, conducted by Eugen Wilcken: Overture, Der Wildschütz (Lortzing); The Second Hungarian Rhapsody (Liszt); Extase (Ganne); The Nigger's Dream (Myddleton); Waltz, Künstlerleben (Joh. Strauss); Selection from Die Königskinder (Humperdinck); Russian Song Potpourri, Dubinnschka (Schirmann). In the interval at **12.20,** News. **1.30,** Sponsored Programme with Gramophone Records. **2.0,** Exchange Rates. **2.20,** Hints for the Housewife. **2.30,** Programme for Children. **3.0** (from **Danzig**), Talk: Educational Problems of the Day. **3.30,** Concert by the Little Orag Orchestra, conducted by Eugen Wilcken: Overture, Die Geschöpfe des Prometheus (Beethoven); Two Songs (Mendelssohn): (a) Spring Song, (b) Spinning Song; Fantasia on Marschner's Music (Urbach); Phönixschwingen (Joh. Strauss); Rhapsody in C (Dohnanyi); Potpourri, From Gluck to Wagner (Schreiner); Overture in G (Azzoni). **4.45,** Talk on Health: Clothing. **5.15,** Market Prices. **5.20,** Ice Report. **5.30,** Song Recital: Three Songs (Schubert): (a) Dass sie hier gewesen, (b) Frühlingssehnsucht, (c) An Laura; Four Songs (Brahms) (a) Botschaft, (b) Serenade, (c) An den Mond, (d) Die Kränze; Two Songs (Richard Strauss): (a) Die Georgine, (b) Frühlingsgedränge: Two Songs (Lothar Windsperger): (a) Die Stadt, (b) Verklärung. **6.0,** Bridge Lesson. **6.25,** Talk: Aspects of the World of To-day—The World of Technics. **6.55,** Weather and News. **7.5,** Figaro—Comic Opera in Four Acts (Mozart). **9.5,** Weather, News, and Sports Notes. **9.15** (approx.), Dance Music from **Berlin (Witzleben). 11.0** (approx.), Close Down.

HILVERSUM

(Announced **HUIZEN**), **296.1 metres;** 20 kW. (7 kW. up to **4.40 p.m.**).—Programme of the Christian Radio Society (N.C.R.V.). **11.40 a.m.,** Police Announcements. **11.55,** Popular Music on Gramophone Records. **12.25 p.m.,** Organ and Saxophone Recital: March from Tannhäuser (Wagner); Russian Patrol (Rubinstein); Hindu Song (Rimsky-Korsakov); Selection from The Golden Cockerel (Rimsky-Korsakov); Aragonaise (Massenet); Kol Nidrei (Hebrew Melody); Twilight (La Torrest); Les Rameaux (Fauré); Dance of the Hours from La Gioconda (Ponchielli); Evening Thoughts (Dunn); Elégie (Massenet); Ballet Suite (Popy); Poème (Fibich); Waltz (Brahms); Coronation March (Meyerbeer). **1.40,** Talk on Agriculture. **1.25,** Interval. **2.40,** Reading. **3.10,** Trio Concert: Trio, Op. 121a (Beethoven); Trio in G Minor, Op. 63 (Weber); Gramophone Records: Trio in D Minor, Op. 49 (Mendelssohn). **4.40,** Programme for Children. **5.40,** Talk by Max Gerisch. **5.55,** Talk by A. Stapelkamp. **6.30,** Elementary English Lesson. **6.40,** Talk. **7.10,** Police Announcements. **7.25,** Ecclesiastical Information. **7.40,** Concert: Panis angelicus (Franck); Allegro con spirito from the Third Sonata in D (Mozart); Chanson and Pavane (Couperin-Kreisler). Talk. Serenade (Lange); Herdertje op de groene wei (Tussenbroek); Houd zonne in 't hart (v. Oort); Minuet and Gavotte (arr. Röntgen); Rots der eeuwen. **8.40,** Popular Music on Gramophone Records. **9.30,** News. **9.40,** Organ Recital: Variations on a Choral; Adagio cantabile (Beethoven); Andante (Haydn); Religious Songs: Rêverie du soir (Rickmann); Berceuse (Crookes); Variations on Well-known Songs. **10.25,** Popular Music on Gramophone Records. **11.10** (approx.), Close Down.

HORBY.—See **Stockholm.**

HUIZEN

(Announced **HILVERSUM**), **1,875 metres;** 8.5 kW.—**11.40** till Close Down, Programme of the Workers' Radio Society (V.A.R.A.). **11.40 a.m.,** Concert by De Notenkrakers, conducted by M. Wins: Matador March (Siede); Waltz, Espana (Waldteufel); Un peu d'amour (Silésu); Alt Wiener Reigen (Oscar Straus); Melody (Smith); Selection from Countess Maritza (Kálmán); Gramophone Records; Waltz, Schwert und Leier (Strauss); Sketches (Petre); Wedding March of the Marionnettes (Translateur); Russian Rhapsody (Michiels); Gramophone Records; Waltz, Ein Myrtenkranz (Ed. Strauss); Serenade (Filipucci); Melody (Francis); Puppe und Hampelmann (Armandola); Einmal geht jeder hinaus (Heymann); Selection from Paganini (Lehár). **1.25 p.m. to 1.40,** Interval. **1.40,** Programme for Women. **2.40,** Programme for Children. **5.10,** Concert by the Drukker Trio: Selection from Les Saltimbanques (Ganne-Tavan); Melody (Franck); Comme j'étais jardinier (Chaminade); Selection from Manon (Massenet-Alder); Light Music on Gramophone Records; Overpeinzing (Broekhuis); The Hunt (Meylink); Nocturne, No. 3 (Liszt); Toréador et Andalouse (Rubinstein); Waltz (Aivaz); Two Guitars (Horlick). **6.10,** Talk. **6.25,** Popular Music on Gramophone Records. **6.30,** Organ Recital by M. Jong: Potpourri (Dostal). **6.40,** Weekly Review. **7.0,** Organ Recital (contd.): Selection from La Bohème (Puccini). **7.10,** Talk. **7.30,** S.O.S. Messages. **7.35,** Wagner Concert by the V.A.R.A. Philharmonic Orchestra, conducted by H. de Groot. Soloist: M. Urlus (Tenor). Prelude to Rienzi; Tenor Solos: (a) Rienzi's Prayer from Rienzi, (b) Love Song from The Valkyries; Prelude to Lohengrin; Lohengrin's Narrative from Lohengrin; Bacchanale from Tannhäuser; Melody from Tannhäuser. **8.30,** De stem van het geweten—Play (Hermynia zur Mühlen), by the V.A.R.A. Dramatic Society. **9.10,** Variety Music on Gramophone Records. **9.20,** Symphony, No. 6—The Pathetic (Tchaikovsky), by the V.A.R.A. Philharmonic Orchestra. **10.0,** News Bulletin. **10.10,** Sea Shanties, sung by J. Moulijn to Lute Accompaniment. **10.25,** Light Music on Gramophone Records. **10.30,** Sea Shanties (contd.). **10.40,** Light Music on Gramophone Records. **11.40** (approx.), Close Down.

INNSBRUCK.—See **Vienna.**

KALUNDBORG.—See **Copenhagen.**

KAUNAS

1,935 metres; 7 kW.—**6.30 p.m.,** Variety Concert. **7.10,** Talk for Women. **7.30,** Talk. **7.50,** Talk: Curiosities in Nature. **8.10,** Variety Concert. **8.40,** Sports Notes. **8.50,** Popular Concert. **9.30** (approx.), Close Down.

KIEL.—See **Hamburg.**

KLAGENFURT.—See **Vienna.**

KOSICE.—See **Prague.**

LAHTI

1,796 metres; 40 kW.; and **HELSINKI, 368.1 metres.**—**4.0 p.m.,** Programme for Children. **4.40,** Programme for Boys. **4.50,** Press Review in Finnish. **4.59,** Time and Weather. **5.10,** Press Review in Swedish. **5.15,** Esthonian Lesson. **5.40,** 'Cello Recital, relayed from Viipuri. **6.0,** Talk. **6.25,** Concert by the Radiolaulajat Choir. **6.45,** Dance Music. **7.5,** Music by a Hawaiian Quartet. **7.15,** Dance Music (contd.). **7.45,** News in Finnish. **8.0,** News in Swedish.

LANGENBERG

473 metres; 60 kW.—**12 Noon,** Concert, conducted by Wolf: March, Under the Star-Spangled Banner (Sousa); Waltz (Waldteufel); Overture, Der Geist des Wojewoden (Grossmann); Ballet Music from Faust (Gounod); Hymn to Night (Scassola); Selection from The Tales of Hoffmann (Offenbach); Strauss Operetta Potpourri (Schlögel); Gallop, Auf der Rennbahn (Lincke). In the interval at **1.0 p.m.,** News. **1.30,** Sponsored Programme with Gramophone Records. **2.30,** Economic Notes and Time. **2.50,** Programme for Children. **3.15,** Talk on Plant Life. **3.40,** Talk on Poetry. **4.0,** See **Munich. 5.0,** Talk for Women. **5.20,** Talk: The Literary Criticism. **5.45,** Weather, Time, Economic Notes and Sports Results. **6.0,** Talk: The Reform of Criminal Law as relating to Young People. **6.20,** Health Talk: Hay Fever and Asthma. **6.35,** The World on Gramophone Records—On the North Coast of Columbia. **6.55,** News. **7.0,** Dance Music by the Small Station Orchestra, conducted by Eysoldt. **8.15,** Concert, conducted by Arnold Schönberg, relayed from **London. 9.20,** News and Sports Notes. **9.45,** Dance Music, relayed from **London. 11.0** (approx.), Close Down.

LAUSANNE.—See **Radio-Suisse Romande.**

LEIPZIG

389.6 metres; 120 kW.; and **DRESDEN, 319 metres.**—**11.5 a.m.,** Concert by the Dresden Philharmonic Orchestra, conducted by Helmut Schaefer. Overture, Isabella (Suppé); Ballet Music from Coppélia (Delibes); Hungarian Sketches (Volkmann-Wittenbecher); Waltz. Mondscheinzauber (Jessel); Ein Opernalbum (Schreiner); Intermezzo, Das getanzte Festmahl (Schettler); Overture, La chasse du jeune Henri (Méhul); Suite, Zur Karnevalszeit, Op. 22 (G. Schumann); Mädi-Walzer (Stolz); Selection from Frederica (Lehár). In the interval at **12.0 Noon,** News, Weather, Snow Report and Time. After the Concert, Exchange. **1.0 p.m.,** Talk for the Unemployed: How to make a Wireless Receiver. **1.30 to 2.0,** Interval. **2.0,** Talk on the Postal Service. **2.35,** Economic Notes. **3.0,** Programme for Young People: 1. Peter will Schiffsjunge Werden—Play (A. Dieffenbach, Music by H. Fritzsche). II, Concert of Light Music. **4.50,** Economic Notes, Weather and Time. **5.10,** Review of Books—Men who made History. **5.35,** Italian Lesson. **5.55,** Programme to be announced. **6.5,** Talk by Dr. Ernst Ledermann. **6.40,** Talk on Augustus the Great, on the Second Centenary of his Death. **7.40,** Die Glücksreiterin—Operetta in Three Acts (Ernst Smigelski). In the interval, Sports Report from **Vienna. 9.15,** News Bulletin. **9.50,** Orchestral Concert from **Frankfurt. 11.0** (approx.), Close Down.

LINZ.—See **Vienna.**

LJUBLJANA

574.7 metres; 2.5 kW.—**6.0 p.m.,** Russian Lesson. **6.30,** Talk: A Voyage to India. **7.0,** Concert of Music by the Slovene Composer Victor Parma, with a Commentary. **8.30,** Concert relayed from the Café Zvezda. **9.15,** Time and News.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—**7.30 p.m.,** Radio Gazette for Lyons and the South-East. **8.35,** Ça c'est Lyon—a Revue, relayed from the Guignol Mourguet. After the Programme, News Bulletin.

MADRID

ARANJUEZ, EAQ, 30.43 metres; 20 kW.—**10.30 p.m.,** Light Music. **10.45,** Radio Chronicle. **11.0,** Concert of Popular Music. **11.20,** Tourist Talk: Toledo. **11.35,** Light Music. **12 Midnight** (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 424.3 metres; 1 kW.—**7.0 p.m.,** Chimes, Exchange Quotations, Talk on the Spanish Novelist, Pereda, and Request Gramophone Records. **7.30,** Agricultural Talk and Request Gramophone Records (contd.). **8.25,** News Bulletin. **8.30,** to **9.30,** Interval. **9.30,** Chimes, Time Signal, and Scientific Talk. **10.0,** Two Plays submitted in connection with the Radio Play Competition. **11.45,** News Bulletin. **12 Midnight,** Chimes and Close Down.

MALMO.—See **Stockholm.**

MILAN.—See **Turin.**

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—**5.25 p.m.,** Band Concert of Folk Music. **6.0,** See **Prague. 6.20,** See **Brno. 8.15,** See **Bratislava. 9.0,** See **Prague. 9.15** (approx.), Close Down.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—**4.0 p.m.** News. **4.10,** Announcements. **4.30,** Concert. **5.30,** Concert of Light Music, or a Relay. **8.0,** Talk in English: Preparatory School Education. **8.55,** Time. **9.5,** Press Review.

MOTALA.—See **Stockholm.**

MUHLACKER.—See **Stuttgart.**

MUNICH

533 metres; 60 kW. Relayed by **Augsburg** and **Kaiserslautern, 560 metres,** and **Nürnberg, 239 metres.**—**4.0 p.m.,** Orchestral Concert, conducted by Erich Kloss. Soloist: Hugo Reker (Violin). Hungarian Concert Overture (Kéler-Béla); La chapelle de Guillaume Tell (Liszt); Canzonetta di Salvator Rosa (Liszt); Scenes from Jessonda (Spohr); Violin Solo: Scherzo Tarantella (Wieniawsky); Suite, At the Circus (Armandola); Serenade (Lehár); Selection from Das Lercherl von Hernals (Ascher); Selection from Die fünf Wünsche (Benatzky). **5.15,** Italian Lesson. **5.35,** Talk for Women: The Stage-struck Girl. **5.55,** Time, Weather and Agricultural Notes. **6.5,** Reading (Alphons von Czibulka). **6.25,** Concert by a Male Voice Choir. **7.0,** Weiss Ferdl und seine Dachauer—Munich Dialect Programme. **8.0,** Gramophone Concert of Modern Dance Music. **8.40,** Beethoven Concert by the Station Orchestra, conducted by Hans Winter. Soloist: Wilhelm Kempff (Pianoforte). Overture, Die Geschöpfe des Prometheus; Concerto in G for Pianoforte and Orchestra. **9.20,** Time, Weather, News and Sports Notes. **9.50,** See **Frankfurt. 11.0** (approx.), Close Down.

NAPLES.—See **Rome.**

NOTODDEN.—See **Oslo.**

OSLO

1,083 metres; 60 kW. Relayed by **Fredrikstad, 365.8 metres; Hamar, 574.7 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres;** and **Rjukan, 447.1 metres.**—**4.0 p.m.,** Variety Music on Gramophone Records. **5.0,**

French Lesson. **5.30,** Reading for Boys. **6.0,** Announcements, Weather and News. **6.30,** Educational Talk: Recent Discoveries in the North. **7.0,** Time Signal. **7.1,** Sven Moren reads from his own Works. **7.30,** Concert by the Station Orchestra, conducted by Hugo Kramm. Soloist: M. Hugo Kolberg (Violin); Fugue in A Minor (Bach); Concerto in D for Violin and Orchestra (Beethoven); Overture in G Minor (Bruckner). **8.30,** Market Prices. **8.40,** Weather and News. **9.0,** Topical Talk. **9.15,** Talk on Bridge, relayed from **Aalesund, 447.1 metres.** **9.45,** Dance Music on Gramophone Records. **11.0** (approx.), Close Down.

OSTERSUND.—See **Stockholm.**

PALERMO

542 metres; 3 kW.—**7.0 p.m.,** Announcements, Tourist Talk, Agricultural Notes, and Giornale Radio. **7.20,** Light Music on Gramophone Records. In an interval at **7.30,** Time Signal and Announcements. **7.45,** Orchestral Concert. Soloists: Gilda Adelfio (Soprano) and S. Gallesi (Oboe): Slav Dance (Dvorák); Soprano Solos: (a) Mistica (Tirindelli), (b) Mediaeval Ballad (De Lucia); First Peer Gynt Suite (Grieg). Oboe Solo: Sonata in G Minor (Handel); Minuet (Boccherini); Largo (Handel); Soprano Solos: (a) Pallide mammole (Trimarchi), (b) Bimba bimbetta (Sibella); Oboe Solo: Improvisation (Buttner); Overture, Ruy Blas (Mendelssohn). In an interval, Talk. **9.0,** Recital of Songs. **9.55,** News Bulletin.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW. Time Signals (on **2,650 metres**) at **9.26 a.m.** and **10.26 p.m.** (Preliminary and 6-dot Signals).—**5.45 p.m.,** Le Journal Parlé. **7.20,** Weather Report. **7.30,** Poetry Reading. **7.45,** Programme for Children. **8.15,** News Bulletin. **8.30,** See **Strasbourg.**

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—**7.0 to 9.0 a.m.,** Probable Relay of the Test Match from Australia. **6.45 p.m.,** Le Journal Parlé. **7.0,** Gramophone Concert of Popular Music. **8.0,** Tourist Talk. **8.15,** Interval. **8.30,** Sponsored Concert. **9.0,** Interval. **9.10,** Recital of Breton Songs by M. Cueff. **10.10,** Dance Music by the Lido Orchestra. **11.0,** News.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—**6.45 a.m.,** Physical Culture. **7.30,** Weather and Physical Culture (contd.). **7.45,** Classical Music on Gramophone Records. **8.0,** Press Review and Weather. **12 Noon,** Educational Talk. **12.15 p.m.,** Concert by the Radio Paris Orchestra: Overture, Les petits fonctionnaires (Messager); Overture, Mam'zelle Trompette (Hirlmann). **12.30,** Organ Recital from the Gaumont Palace: Overture, The Bohemian Girl (Balfe); Making Faces at the Man in the Moon (Rich); Selection from Samson and Delilah (Saint-Saëns); Romantic Waltz (Lanner). **1.0,** Exchange, News, and Weather. **1.5,** Orchestral Concert (contd.): Betsy (Bonincontro); La Cocarde de Mimi Pinson (Goublier Junior); Selection from The Last Waltz (O. Straus); Selection from Lilac Time (Schubert-Berté); Selection from Tom Jones (German-Higgs). **1** the interval at **1.30,** Exchange. **2.0,** Exchange. **3.45,** Exchange and Market Prices. **6.10** Agricultural Talk. **6.30,** Market Prices, Weather, Agricultural Report, and Exchange. **6.40,** German Lesson. **7.0,** Medical Talk. **7.20,** Concert by the Radio Paris Orchestra: Tableaux musicaux (Daneau); Summer Days Suite (Eric Coates); Fagottino (Canussi). **7.45,** Commercial Prices and News. **8.0,** Literary Readings from the Works of Chamfort and Rivarol. **8.30,** News and Weather. **8.40,** Fashion Review by Mlle. José. **8.45,** Gramophone Records: Die Loreley (Liszt); Barcarolle for Pianoforte in F Sharp (Chopin). **9.0,** Concert by the Lamoureux Concert Society, conducted by Albert Wolff, relayed from the Salle Gaveau; Soloist: Maud Randle (Pianoforte): Easter Overture (Rimsky-Korsakov); Prélude à l'après-midi d'un faune (Debussy); Concerto for Pianoforte and Orchestra (Delius); Fantastic Symphony (Berlioz). In the interval, Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW. Relayed by **W8XK** on **48.86 metres** and **25.27 metres.**—**9.0 p.m.,** Work-a-day Thoughts. **9.5,** Business News. **9.15,** Programme to be announced. **9.30,** Weather Report. **9.32,** Market Reports. **9.45,** Pianoforte Interlude. **9.50,** David Lawrence Dispatch. **9.55,** KDKA Artist Bulletin. **9.58,** Programme Announcements. **10.0,** Westinghouse Chef. **10.15,** Programme to be announced. **10.30,** The Singing Lady. **10.45,** Little Orphan Annie, from **New York.** **11.0,** Maude and Cousin Bill, from **New York.** **11.15,** Time Signal. **11.16,** Weather Report. **11.17,** Teaberry Sport Review. **11.22,** Press News Reeler. **11.27,** Strange Facts. **11.29,** Temperature Report. **11.30,** Sheer Romance. **11.45 to 3.15 a.m. (Thursday), New York** Relay. **11.45,** To-day's News, by Lowell Thomas. **12.0 Midnight,** Amos 'n' Andy. **12.15 a.m.,** Carlson Robison and his Barbasol Buckaroos. **12.30,** Five Star Theatre. **1.0,** Eno Crime Club. **1.30,** Time Signal and Harriett Lee and her Leaders. **1.45,** Country Doctor. **2.0,** Adventures of Sherlock Holmes. **2.30,** Woodbury Programme with Morton Downey and Donald Novis. **3.0,** D. W. Griffith's Hollywood. **3.15,** Bridge School of the Air, by E. Hall Downes. **3.30,** Around the Cracker Barrel. **3.45,** Bradley Kincaid. **4.0,** Time Signal. **4.1,** Teaberry Sport Review. **4.11,** Temperature Report. **4.12,** Weather Report. **4.13,** KDKA Artist Bulletin. **4.15,** Press Last Minute News Flashes. **4.20,** Henry Halstead and his Californians. **5.0,** College Inn Orchestra, from **New York.** **5.30,** Time Signal and Goodnight.

PORSGRUND.—See **Oslo.**

POZNAN

335 metres; 1.9 kW.—**6.0 p.m.,** Miscellaneous Items and Announcements. **6.28,** Time Signal. **6.30 to 7.50,** See **Warsaw.** **7.50,** Theatre Notes and Programme Announcements. **7.55 to 9.15,** See **Warsaw.** **9.15,** Time, Sports Notes and Police Report. **9.30,** Popular Music on Gramophone Records. **9.40,** Programme from **Cracow.** **9.55,** Dance Music on Gramophone Records. **11.0** (approx.), Close Down.

PRAGUE

488.6 metres; 120 kW.—**3.10 p.m.,** Concert by the Station Orchestra, conducted by O. Jeremias: Overture, The Twins (Weis); Selection from The Two Widows (Smetana); Selection from The Secret (Smetana-Jeremias). **4.0,** Medical Talk. **4.10,** See **Brno.** **5.5,** Agricultural Talk. **5.15,** Talk for Workers. **5.25,** News in German. **5.30,** German Transmission: Talk for Workers and Review of New Books. **6.0,** News. **6.5,** Talk: The Czech Kings. **6.20,** See **Brno.** In the interval at **8.0,** Time Signal. **8.15,** See **Bratislava.** **9.0,** Time Signal, News, Press Review, and Sports Notes. **9.15** (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS; 403 metres; 25 kW.; **LAUSANNE, 680 metres; and GENEVA, 760 metres.**—**5.0 p.m.** (from **Lausanne**), Programme for Children. **6.0** (from **Geneva**), Weather, News and Report on the Work of the League of Nations. **6.30** (from **Lausanne**), Agricultural Talk. **7.0** (from **Lausanne**), Dramatic Programme. **7.30** (from **Geneva**), Concert by the Plainpalais Municipal Orchestra, conducted by Alfred Dupont, a Choir and a Peasant Orchestra, conducted by Herman Schenk: Marche des fiançailles (Parès); Selection from Mirella (Gounod); Choral Music: (a) Réveil (Monestier), (b) Notre chalet, là-haut (Boller), (c) Le rossignol (Grétry), (d) Sur l'Alpe voisine (Daleroze); Music by the Peasant Orchestra; Choral Music: (a) Là-haut tout en haut (Bovet), (b) Les cloches du soir (Weyts), (c) Chante montagnard (Moudon), (d) Dimanche de mai (Gossler); Gavotte and Farandole (Pierné); Impressions of Geneva (Koeckert); Waltz from The Merry Widow (Lehar). **8.30** (in the interval), News and Weather. **9.20** (from **Lausanne**), Dance Music from the Bel-Air Metropole. **10.0** (approx.), Close Down.

RIGA

525 metres; 15 kW.—**4.0 p.m.,** Orchestral Concert: Overture, The Barber of Seville (Rossini); Selection from Aïda (Verdi); Selection from Faust (Gounod); Overture, Tannhäuser (Wagner). **5.0,** English Lesson. **5.30,** Agricultural Talk. **6.0,** Weather Report. **6.5,** Relay of an Operetta. In the intervals, News and Weather. After the Programme, Dance Music. **10.0** (approx.), Close Down.

RJUKAN.—See **Oslo.**

ROME

Call 1RO, 441 metres; 50 kW. Relayed by **Naples, 319 metres;** and **2RO, 25.4-80 metres.**—**7.0 a.m.,** Gymnastics. **7.15 to 7.30 a.m.,** Giornale Radio and Announcements. **11.30,** Weather and Light Music on Gramophone Records. **12 Noon,** Time and Announcements. **12.2 to 1.15 p.m.,** Orchestral Concert: The Old Man of the Mountain (Brown); Sperduti nel blu (Borella); Hawaiian Song (Restano); Slav Rhapsody (Friedemann); Sogno radioso (Culotta); Seguidilla (Malatesta); Selection from Frasquita (Lehar); Melody (Nicholls); Wedding of the Butterflies (Barzon); Dannbiana (Rotter). In the interval from **12.30 to 12.45 p.m.,** Giornale Radio and Exchange. **3.45,** Children's Radio Review. **4.10,** Announcements. **4.15,** Exchange and Giornale Radio. **4.30 to 5.15,** Song Recital. **6.0,** Giornale Radio. **6.10 (Naples),** Shipping and Sports Notes. **6.15,** Agricultural Report and Announcements. **7.0,** Time, Announcements, and Light Music on Gramophone Records. **7.15,** Medical Talk. **7.30,** Sports Notes and Tourist Report. **7.45,** Relay of an Opera. In the intervals, Theatre Notes and News.

SALZBURG.—See **Vienna.**

SCHENECTADY

GENERAL ELECTRIC COMPANY, WGY, 379.5 metres; 50 kW. Relayed at intervals by **W2XAF on 31.48 metres** and by **W2XAD** on **19.56 metres.**—**7.30 p.m. to 12.15 a.m. (Thursday), New York** Relay. **7.30 p.m.,** Westminster Choir. **8.0,** Two Seats in the Balcony. **12 Midnight,** Soloist. **12.15 a.m.,** Stock Reports. **12.30,** Ralph Kirbery (Baritone). **12.30 to 2.30, New York** Relay. **12.30,** Ralph Kirbery (Baritone). **12.45,** The Goldbergs. **1.0,** Royal Vagabonds. **1.30,** The Shadow. **2.0,** Musical Programme. **2.30,** Supper Club Orchestra and Programme Resumé.

SCHWEIZERISCHER LANDESSENDER

BEROMUNSTER, 459 metres; 60 kW.; **BASLE, 244.1 metres;** and **BERNE, 245.9 metres.**—**11.28 a.m.,** Time Signal from Neuchâtel Observatory. **11.30,** Weather and News. **11.40,** Gramophone Record: Overture, Ruy Blas (Mendelssohn). **11.45,** Mendelssohn Songs on Gramophone Records. **11.55,** Mendelssohn Pianoforte Music on Gramophone Records. **12.10 p.m.,** Gramophone Records: Carnival Suite (Schumann). **12.35,** Weather and Exchange. **12.45 to 2.30,** Interval. **2.30,** Concert by the Little Radio Orchestra. **3.30** (from **Zürich**), Programme for Children. **4.0,** Popular Music on Gramophone Records. **4.30,** Weather. **4.35 to 5.30,** Interval. **5.30** (from **Zürich**), Wilhelm Schäfer reads from his own Works. **6.0,** Time, Weather, and Market Prices. **6.15** (from **Zürich**), Elementary English Lesson. **6.45** (from **Zürich**), Hans Sonnenstössers Höllenfahrt—Radio Play in Five Acts (Paul Apel), with Incidental Music by Friedrich Beermann. **8.30,** Weather and News. **8.40,** Late Concert by the Radio Orchestra, conducted by Hermann Hofmann. **9.15** (approx.), Close Down.

SOTTENS.—See **Radio-Suisse Romande.**

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by **Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,348 metres; Ostersund, 770 metres;** and **Sundsvall, 542 metres.**—**4.5 p.m.** (from **Göteborg**), Programme for Children. **4.30,** Popular Music on Gramophone Records. **5.30,** Talk: Old and New Ornamental Gardens. **6.0,** Björnson's Poems—Song Recital by Elisabeth Hoel. **6.15,** Weather and News. **6.30,** Cabaret Programme. **7.15,** Talk. **7.45,** Violin Recital by Boris Schwarz, relayed from **Malmö (231 metres):** Sonata de camera (Nardini); Sicilienne and Rigaudon (Francœur); Siciliano (von Paradis); Rondo (Mozart); Hymn to the Sun (Rimsky-Korsakov); Spanish Dance (Granados); Tambourin chinois (Kreisler). **8.25,** Reading. **8.45,** Weather and News. **9.0,** Dance Music by the Enders Orchestra, relayed from the Bern Hall. **10.0** (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—**11.30 a.m.,** Classical Music on Gramophone Records. **12.45 p.m.,** News. **1.0,** Time and Exchange. **1.5,** Quintet Concert, relayed from **Bordeaux-Lafayette. 1.50 to 4.45,** Interval. **4.45,** Talk on Electricity in German. **5.0,** Dance Music: Pasodoble, Madrid; It looks like Susie; Slow Foxtrot. Say it isn't so; Waltz; La ballade des bébés; Slow Foxtrot, Tom Boy; Tango, Mi Torneuto; You; If you were only mine; Waltz, Künstlerleben; Foxtrot, My Baby's gone; Foxtrot, It looks like Love; Tango, Tes yeux, Marga; Like I like; Foxtrot, I'm so in love; March, Esmeralda. **6.0,** Trio Concert, relayed from **Lille (265.4 metres).** **7.0,** Talk in German on French Civilisation: The Song of Roland. **7.15,** Legal Talk. **7.30,** Time and News. **7.45,** See **Paris (Eiffel Tower).** **8.15,** Lottery Results and Light Music on Gramophone Records. **8.30,** Concert by the Municipal Orchestra, relayed from the Palais des Fêtes. Conductor: Paul Bastide. Soloists: Nathalie Radisse and M. Ehrhard (Pianoforte), and Paul Krauss (Flute): Symphony No. 21 in B flat La Reine (Haydn); Concerto No. 10 in E flat for Two Pianofortes (Mozart); Pianoforte Concerto (Nathanael Berg); Flute Solo: First Suite from Namouna (Lalo). **10.30.** Dance Music from the Savoy. **12 Midnight** (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and **FREIBURG, 570 metres.**—**12.30 p.m.,** Concert from **Langenberg.** **1.0,** Sponsored Music. **1.15,** Sponsored Music, relayed from **Mannheim, 3.0,** Programme for Children. **4.0,** See **Munich.** **5.15,** Time, Weather, and Agricultural Notes. **5.25,** Talk: The Preservation of National Monuments and the Protection of the Countryside in Württemberg. **5.50,** Talk: The Dornier Airship D.O.X. as a Means of making the Nation Air-minded. **6.15,** Time and News, followed by Popular Music on Gramophone Records. **6.45,** Report on the Third Day of the International Ski-ing Championship in Innsbruck. **7.0,** See **Munich.** **8.0** till Close Down, See **Frankfurt.** In the interval at **9.0,** Time and News. **11.0** (approx.), Close Down.

SUNDSVALL.—See **Stockholm.**

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—**6.0 p.m.,** News Bulletin. **6.15,** Popular Music. **6.30,** Extracts from Countess Maritza—Operetta (Kálmán). **6.45,** Opera Music: Selection from: (a) Boris Godunov (Mussorgsky), (b) Faust (Gounod). **7.0,** Violin Solos: Berceuse (Ravel); Le Lac de Côme (Galos). In the interval, Talk. **7.15,** Racing Results, Market Prices and News. **7.25,** Local News. **7.30,** Extracts from Operettas: (a) Frasquita (Lehár), (b) La Mascotte (Audran), (c) The Girl in the Taxi (Gilbert). **7.45,** Airs from Opera: (a) Rigoletto (Verdi), (b) I Pagliacci (Leoncavallo), (c) Romeo and Juliet (Gounod). **8.0,** Music by a Viennese Orchestra. **8.15,** Accordion Music. **8.30,** Operetta Music: Selection from: (a) Countess Maritza (Kálmán), (b) The Merry Widow (Lehár), (c) Nina Rosa (Romberg). **8.45,** Instrumental Solos. **9.0,** Concert arranged by the Society La Sirène. Conductor: M. Ichac. **10.15,** North African News. **10.30,** Concert for Listeners in Morocco: Hofballtänze (Lanner); Duet from Manon (Massenet); Waltz, Amoureuse (Berger); The Two Grenadiers (Schumann); Parisette (Prodhomme). **11.0,** Orchestral Music. **11.15,** Chansonnettes. **11.30,** Programme in English by the I.B.C. Concert: "A Night in Spain"; Military Band: El Abanico; Comedian: Charlie in Spain; Dance Band: (a) In old Madrid, (b) Lady of Spain; Duet: When Yuba plays the Rumba on the Tuba; Military Band: A Frangesa; Dance Band: (a) Belle of Barcelona, (b) On a Little Balcony in Spain. **12 Midnight,** Weather and Announcements. **12.5 a.m. (Thursday),** Dance Music. **12.30** (approx.), Close Down.

TRIESTE

247.7 metres; 10 kW.—**4.0 p.m.** till Close Down, See **Turin.**

TRONDHEIM.—See **Oslo.**

TURIN

273.7 metres; 7 kW. Relayed by **Milan, 331.5 metres; Genoa, 312.8 metres;** and **Florence, 500.8 metres.**—**4.0 to 5.0 p.m.,** Soprano and Baritone Song Recital. **5.35,** Giornale radio, Agricultural Report, and Dopolavoro Notes. **6.0,** Giornale radio. **6.10,** Popular Music on Gramophone Records. **6.25,** Tourist Talk. **6.30,** Time, Announcements, and Popular Music on Gramophone Records. **7.0,** Giornale radio, Weather, and Variety Music on Gramophone Records. **7.15,** Sponsored Medical Talk. **7.30,** A Comedy in Three Acts, followed by Orchestral Concert: Die Spieluhr des Pompadours (Noack); Melody from Le Ville (Puccini); Symphonic Prelude (De Micheli); Selection from Madame Butterfly (Puccini). **10.0,** Giornale radio.

VATICAN CITY

19.84 metres (Morning) and **50.26 metres (Evening);** 10 kW.—**10.0 to 10.15 a.m.,** Religious Information in Spanish. **7.0 to 7.15 p.m.,** Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by **Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 245.9 metres;** and **Salzburg, 218.5 metres.**—**4.15,** Gramophone Concert: Part I—Opera Music; Triumphal March from Aida (Verdi); Duet from La Bohème (Puccini); Chorus from Othello (Verdi); Final Duet from André Chénier (Giordano); Scene from The Bartered Bride (Smetana); Final Scene from Faust (Gounod); Part II—Dance Music by Jack Payne and his Orchestra; Onestep, Listen to the German Band (Gordon-Conelly); Slow Foxtrot, I'll do my Best to make you happy (Noble); Foxtrot, Love is the Sweetest Thing (Noble); Slow Foxtrot, The Old Man of the Mountain (Young-Brown); Waltz, Masquerade (Webster); Foxtrot, Oh that Kiss! (Warren-Dixon-Young). **5.10,** Talk: Five Years of Advice for Young People in Vienna. **5.35,** Talk for Workers: The Problem of Short Time at the Geneva Conference. **6.0,** Time, Weather, and Programme Announcements. **6.10,** Report on the International Ski-ing Championships at Innsbruck. **6.25,** Relay from the State Opera House. In an interval, News, Weather, and Announcements. **9.0,** Talk on the Austrian Musical Festival (April 22nd and 23rd). **9.15,** Jazz Music, relayed from the Oase.

WARSAW

1,411 metres; 120 kW.—**4.0 p.m.,** Variety Music on Gramophone Records. In the interval, Announcements. **4.40,** Talk. **4.55,** Programme Announcements. **5.0,** Light Music from the Adria. News in the interval. **6.0,** Miscellaneous Items. **6.20,** Agricultural Correspondence. **6.30,** Talk: The Famous Novelist, François Mauriac. **6.45,** Radio Journal. **7.0,** Recital of Old Songs and Melodies by Mme. J. Godlewska and R. Boelke. **7.55,** Sport Notes. **8.0,** Radio Journal. **8.5,** Chamber Music Concert: Pianoforte Quartet in E Flat (Mozart); Trio Serenade, Op. 8, for Violin, Viola and 'Cello (Beethoven). **9.0,** On the Horizon. . . **9.15,** Popular Music on Gramophone Records. **9.40,** Talk in Esperanto, relayed from **Cracow (312.8 metres).** **9.55,** Aviation Weather Report and Police Notes. **10.0,** Dance Music from the Café Ziemianska. **11.0** (approx.), Close Down.

ZURICH.—See **Schweizerischer Landessender.**

THURSDAY

FEBRUARY THE NINTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL	Concert from the Town Hall, Birmingham. Mr. Desmond MacCarthy: "The Art of Reading." "Ring o' Roses," feature programme. Orchestral concert.
LONDON REGIONAL	Concert from Queen's College, Birmingham. Instrumental concert. Organ music. Orchestral concert. Chamber music.
MIDLAND REGIONAL	Concert from Queen's College, Birmingham. Light French Music, orchestral concert. Male Voice Choir concert from the Co-operative Hall, Rugby.
NORTH REGIONAL	Orchestral music. Belfast programme.
WEST REGIONAL	Orchestral concert. Organ music. Light music.
SCOTTISH REGIONAL	"Facet," drama viewed from various angles. Dr. William Grant: "Oor ain Dictionar." Concert by the Reid Symphony Orchestra. Choral and orchestral concert.
BELFAST	The Music of Mozart. orchestral concert. "The Volunteer," an impression of the work of the Royal Naval Volunteer Reserve, relayed from H.M.S. "Caroline."

ABROAD

BRESLAU	Wagner concert. by the Silesian Philharmonic Orchestra, conducted by K. Köhler.
COPENHAGEN	The Radio Symphony Orchestra, conducted by F. Mahler.
HEILSBERG	Famous singers on gramophone records.
RADIO PARIS	Brahms' pianoforte recital, by L. Kartun.

BARCELONA

RADIO-BARCELONA, Call EAJ1, 348.8 metres; 8 kW.—**6.0 p.m.,** Trio Concert. **7.0,** Request Gramophone Concert. **7.30,** Exchange Quotations and Programme for Women. **8.0,** Popular Music on Gramophone Records, followed by News. **8.0,** Chimes from the Cathedral. Weather, Exchange Quotations and Market Prices. **9.5,** Part Relay of an Opera from the Gran Teatro del Liceo. **11.0** (in an interval), News. **12 Midnight** (approx.), Close Down.

BARI

269.8 metres; 20 kW.—**7.0 p.m.,** Agricultural Notes, Tourist Report and Announcements. **7.20,** Giornale Radio and Weather. **7.30,** Time and Announcements. **7.35** (approx.), Concert by a Military Band: Overture, Aroldo (Verdi); Selection from Gloria (Cilea); Selection from Lucia di Lammermoor (Donizetti); Intermezzi, Sinfonici for Agamemnon (Pizzeti); March, Ispico (Rubino). In the interval, Announcements. **9.30,** Light Music on Gramophone Records. **9.55,** News.

BASLE.—See **Schweizerischer Landessender.**

BELGRADE

430.4 metres; 2.5 kW.—**3.0 p.m.,** Orchestral Concert: Overture, Der Erlenhügel (Kuhlau); Selection from Hansel and Gretel (Humperdinck); Ballet Scene from Hamlet (Thomas). **4.0,** Popular Music on Gramophone Records. **5.25,** Time and Programme Announcements. **5.30,** French Dialogue. **6.0,** Popular Music on Gramophone Records. **6.30,** Talk. **7.0,** Recital of Yugoslav Songs. **7.30,** Concert by the Belgrade Philharmonic Orchestra: Overture, Lady Godiva (Novak); Concerto for Violin (Sibelius); Symphonic Poem, My Youth (Foerster). **9.0** (approx.), News, followed by Concert from the Restaurant Ratnicki Dom.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—**11.55 a.m.,** Nauen Time Signal. **12.35 p.m.,** News Bulletin. **1.0,** Gramophone Concert of Vocal and Instrumental Music, relayed from **Berlin (Witzleben).** **2.0,** Musical Programme for Children. **2.30,** Weather and Exchange. **2.45,** Anecdotes by Heinz Steguweit. **3.0,** Talk for Countrywomen. **3.30,** Concert from **Berlin (Witzleben).** **4.10,** Talk on Philosophy. **4.30,** Chamber Music: Impromptu in A Flat (Schubert); German Dances (Schubert); Ecossaises (Schubert); Ecossaises (Chopin); Etude (Chopin). **5.0,** Talk: God and the World in German Mediæval Literature. **5.30,** Violin Recital: Prelude for Violin, Op. 117, No. 6 (Reger); Second Movement from the Sonata for Violin (Artur Schnabel); First Movement from the Violin Sonata, Op. 13 (Philipp Jarnach); First Movement from the Sonata for Violin, Op. 18 (Paul Höffer). **5.55,** Weather and Announcements. **6.0,** German for Germans. **6.30,** A Poem. **6.35,** Agricultural Talk. **7.0,** See **Langenberg.** **9.0,** Weather, News, and Sports Notes. **9.45,** Weather Report for Shipping, followed by Dance Music from **Berlin (Witzleben).** **11.0** (approx.), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—**3.30 p.m.,** Orchestral Concert: Potpourri, Von Wien durch die Welt (Hruby); Mein Herz (Pataky); Viennese Folk Song (Brandl-Kreisler); Prelude (Rachmaninov); The Blue Pavilion (Armandola); Witches' Dance (MacDowell); Waltz from Das Fürstenkind (Lehár). **4.30,** Talk on Legal Questions of the Day. **4.50,** The Children's Calendar for February. **5.10,** Pianoforte Recital of Dances by Nikolai Lopatnikov: Two Gavottes (Prokofiev); Two Dance Pieces (Hindemith); Two Brazilian Dances (Milhaud); Two Ironic Dance Pieces (Lopatnikov). **5.30,** Talk: Relief for the Unemployed. **6.0,** The Witzleben Station informs its Listeners. . . . **6.5,** Topical Talk. **6.15,** People of Yesterday speak to People of To-day. **7.0,** See **Frankfurt.** **9.20** (approx.), Weather, News, and Sports Notes. **9.30** (approx.), Dance Music from the Eden Pavilion. **11.0** (also relayed by **Zeesen** on **31.38 metres**), Symphonia domestica, Op. 53 (R. Strauss), by the Berlin Philharmonic Orchestra, conducted by Richard Lert.

BERNE.—See **Schweizerischer Landessender.**

BEROMUNSTER. — See **Schweizerischer Landessender.**

BODEN.—See **Stockholm.**

BODO.—See **Oslo.**

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—**7.30 p.m.,** News and Exchange. **7.40,** Talk arranged by the International Labour Bureau. **7.55,** Lottery and Charades Results. **8.0,** Talk on Wines. **8.15,** News Bulletin. **8.30,** Concert. After the Concert, Entertainments Guide and Time Signal.

BRATISLAVA

279 metres; 14 kW.—**5.20 p.m.,** Mandoline Band Concert. **6.0,** See **Prague.** **6.5,** Music Review. **6.20** till Close Down, See **Prague.** **9.35** (approx.), Close Down.

BREMEN.—See **Hamburg.**

BRESLAU

325 metres; 60 kW.; and **GLEIWITZ, 253 metres.—12.10 p.m.,** Weather for Farmers. **12.12,** Concert by the Small Silesian Philharmonic Orchestra, conducted by Hermann Behr. Overture, The Hermit's Bell (Maillart); Albumblatt (Kaun); La Caressante (Sokolov); Kaiser-Walzer (Joh. Strauss); Mutig voran (Joh. Strauss). **12.45,** Time, Weather, News and Exchange. **1.5,** Popular Music on Gramophone Records. **1.45,** Sponsored Programme, with Gramophone Records. **2.10,** Agricultural Prices. **2.40,** Talk: Winter Sports in the Eastern District of the Riesengebirge. **2.50,** Review of Technical Books. **3.10,** Harmonium Recital by Erich Schäffer. **3.30,** See **Heilsberg.** **4.30,** Agricultural Prices and Programme for Children. **5.0,** Talk on Music. **5.20,** Programme to be announced. **5.35,** Talk for Workers. **6.0,** Medical Talk: Heart Disease. **6.30,** Weather for Farmers. **6.35,** Gramophone Concert: Military March (Schubert); Selection from Die Försterchristel (Jarno); Duet from The Gipsy Baron (Joh. Strauss); Serenade (Moszkowsky); Waltz, Loreley-Rheinklänge (Joh. Strauss, Sen.). **7.0,** Wagner Concert by the Silesian Philharmonic Orchestra, conducted by Karl Köhler. Soloists: Berta Ebner-Oswald (Soprano), Adolf Löltgen (Tenor), and Alfons Eeçarins (Baritone). Prelude to The Mastersingers; King Henry's Aria from Lohengrin; The Landgrave's Aria from Tannhäuser; Song at the Forge from Siegfried; Siegfried Idyll; Aria, Brünhilde Foretells; Siegmund's Death from The Valkyries; Tristan mir! from Tristan und Isolde; Hans Sach's Monologue from the Mastersingers. In the Interval at **8.0** to **8.10,** News. **9.10,** Time, Weather, News, Sports Notes, and Programme Announcements. **9.30,** Talk for Workers in Esperanto. **9.40,** Talk: Equestrian Clubs in the Country. **10.0** (approx.), Close Down.

BRNO

242 metres; 35 kW.—**3.10 p.m.,** Concert by the Station Orchestra, conducted by Jan Janota: Il cavaliere romantico (Toni); Suite algérienne (Saint-Saëns); Prelude à l'après-midi d'un faune (Debussy); Symphonic Variations, Op. 78 (Dvorák). **4.10,** Programme for Children. **4.50,** Talk for Students. **5.0,** Literary Review. **5.15,** See **Prague.** **5.25,** German Transmission: News and Two Talks. **6.0,** See **Prague.** **6.5,** English Lesson. **6.20,** Talk. **6.35** till Close Down, See **Prague.** **9.35** (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—**12.0 Noon,** Gramophone Concert: March, Nocture (Chopin); Serenade in B Flat (Schubert-Liszt); Mon ami Pierrot (Zimmerman); Gnomenreigen (Liszt); Scènes Alsaciennes (Massenet); Overture, Norma, arranged for Guitar (Bellini); Waltz, Hawaiian Rose (Berlin); Krenz (Strauss); Polka, Flatlergeister (Jos. Strauss); Fantasia Capriccio (Vinas); Melody (Faulwetter). **1.0 p.m.,** Le Journal Parlé. **1.10,** Concert by the Small Station Orchestra, conducted by P. Leemans. **5.0,** Popular Music on Gramophone Records. **5.30,** Programme for Children. **6.0,** Talk for Women. **6.15,** Gramophone Concert: Overture, Egmont (Beethoven); Four German Dances (Mozart); Song from Samson and Delilah (Saint-Saëns); Navarra (Albéniz); Minuet (Mozart); Sierra Morena (Monasterio); Selection from Tannhäuser (Wagner); La Romanesca (arr. Achron); Offenbach Operetta Potpourri; Overture, The Bartered Bride (Smetana). **7.15,** Talk for Workers. **7.30,** Sports Review. **8.0,** Concert by the Station Orchestra, conducted by Jean Kumps: Symphonic Sketches; La Mer (Gilson). **8.45,** Talk: Chinese Food. **9.0,** Concert (contd.): Le Chasseur maudit (Frank); Prelude and Scherzo for Pianoforte and Orchestra (Goyens), the Composer at the Pianoforte; Adagio for Strings (Leken); Extracts from Versailles (Guillaume); Fantasia on a Walloon Theme (Ysaye). **10.0,** Le Journal Parlé. **10.10,** Gramophone Concert of Old and Modern Dances and Classical Music.

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW.—Programme in Flemish.—**12.0 Noon,** Concert by the Small Station Orchestra, conducted by P. Leemans; Soloist: M. Wigy (Violin): Part I, Russian Music: Fantasia on Russian Themes (Leemans); Musical Box (Liadov); Lamentation (Liadov); Melody (Rubinstein); Le Christ renait (Rachmaninov); Prelude (Rachmaninov). Part II, Spanish Music: Danza Gitana and Danza Aragonesa (Granados); Spanish Pieces for Violin (Falla); Nocture and Fiesta from Gitanerias (Infante); Seville (Albéniz). **1.0 p.m.,** Le Journal Parlé. **1.10,** Gramophone Concert: Overture, Der Freischütz (Weber); Selection from The Tales of Hoffmann (Offenbach); Selection from Rigoletto (Verdi); Interlude: Three Flemish Songs; Ballet Music from Faust (Gounod). **5.0,** Concert by the Radio Orchestra, conducted by Charles Walpot; K.V.R.O.—Stijdlied (Meulemans); Marene lorraine (Ganne); Spanish Caprice (Rimsky-Korsakov); Ballet Music from Milenka (Block); Marche commémorative (Gilson). **5.45,** Programme for Children. **6.30,** Programme by the V.K.B.J. **7.15,** Talk. **7.30,** Programme for Women. **8.0,** Concert by the Radio Orchestra, conducted by Charles Walpot: Overture, The Gipsy Baron (Joh. Strauss); Selection from White Horse Inn (Benatzy); Rhapsody in B Minor (Hartung). **8.35,** Russian Music for Choir. **8.50,** Talk: The Catholic Workers' Organisation. **9.5,** Concert by the Radio Orchestra (contd.): Overture, Chal Romano (Ketelbey); Two Pieces (Albéniz): (a) Catalan Caprice, (b) Malaguena; Ballet Suite (Siede); Scènes alsaciennes (Massenet); Selection from L'Arlésienne (Bizet). **9.**, Evensong **10.0,** Le Journal Parlé. **10.**, Gramophone Concert; Till Eulenspiegel's Merry Pranks (R. Strauss); The Nutcracker Ballet (Tchaikovsky); Overture, Mireille (Gounod). **11.0** (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—**4.0 p.m.,** Concert of Light Music and Romanian Music by the Dinico Orchestra. **5.0,** News and Time Signal. **5.10,** Talk. **5.25,** Concert by the Dinico Orchestra. **6.0,** Talk on Romania, Her Cereals. **6.40,** Relay from the Opera House. In the intervals, News.

BUDAPEST

550 metres; 18.5 kW. Programme also relayed on **840 metres** from **6.45** to **11.0 p.m.**—**4.30 p.m.,** Dance Music from the Café New York, with Popular Songs by Karl Vajda. **5.10,** English Lesson. **5.30,** Gramophone Concert: Selection from The Land of Smile (Lehár); Der schönste Gedanke bist du (Abraham); Largo (Händel); La Paloma (Yradier); Lied (Seress); Selection from Ball im Savoy (Abraham); Potpourri, Von Wien durch die Welt (Hruby); Lied (Kokay); Lied (Kondor). **6.15,** Programme by Nikolaus Suranyi. **6.45,** Concert by the Waldbauer-Kerpely String Quartet, relayed from the Academy of Music. Soloist, Imre Stefanija (Pianoforte); String Quartet in A Minor (Brahms); String Sextet in B Flat (Brahms); Pianoforte Quintet (Schumann). **8.45,** News. **8.50** (approx.), Concert by Imre Magyari and his Cigány Band, relayed from the Hotel Hungaria. **9.45,** Concert by the Opera House Orchestra, conducted by E. Friedl: Overture, Der Zigeunerprimas (Kálmán); Selection from The Count of Luxembourg (Lehár); Intermezzo from Die geschiedene Frau (Fall); Selection from The Geisha (Jones); Melody from Das Zirkuskind (Eysler); Melody from A Cossack Wedding (Peregrin); Selection from Die lustigen Nibelungen (O. Straus). **11.0** (approx.), Close Down.

CASSEL.—See **Frankfurt.**

COPENHAGEN

281 metres; 0.75 kW.; and **KALUNDBORG, 1,153 metres;** 7.5 kW.—**11.0 a.m.,** Time Signal and Chimes from the Town Hall. **11.2,** Concert by the Max Skalka String Ensemble, relayed from the Hotel d'Angleterre. **1.0 to 2.0,** Interval. **2.0,** Chopin Pianoforte Recital by Aage Foerlev; Nocturne in B; Nocturne in F Sharp Minor; Barcarolle. **2.20,** Concert by the Tedd Petersen Orchestra, relayed from the Wivex Restaurant. **4.0,** Programme for Boys. **4.40,** Exchange and Fish Market Prices. **4.50** Agricultural Talk. **5.20,** English Lesson. **5.50,** Weather. **6.0,** News. **6.1**, Time Signal. **6.16,** Talk. **6.45,** Danish Lesson. **7.10,** Opera, Operetta and Waltz Concert, relayed from the State Broadcasting Building. The Radio Symphony Orchestra conducted by Fritz Mahler and a Students' Choir. Soloists: Rose Ader-Trigona and Herbert Ernst Groh (Songs): Overture, The Merry Wives of Windsor (Nicolai); Aria from The Merry Wives of Windsor (Nicolai); Soprano Solos: (a) Aria from A Masked Ball (Verdi), (b) Gavotte from Manon (Massenet); Song from Le Postillon de Longjumeau (Adam); Overture, Les dragons de Villars (Maillart); Overture, A Night in Venice (Joh. Strauss); Song, Coloratura Waltz, O schöner Mai; Song from A Night in Venice (Joh. Strauss); Choir: Waltz, The Blue Danube (Joh. Strauss); Duet from Der Bettelstudent (Millöcker); Overture, Orpheus in the Underworld (Offenbach-Binder). **9.15,** News. **9.30,** Dance Music by the Kai Julian Band, relayed from the National Scala. In the interval at **11.0,** Time Signal and Chimes from the Town Hall. **11.30** (approx.), Close Down.

CORK.—See **Dublin.**

DANZIG.—See **Heilsberg.**

DRESDEN.—See **Leipzig.**

DUBLIN

Call 2RN, 413 metres; 1.2 kW., and **CORK, 224.4 metres.**—**1.30 to 2.0 p.m.,** Time Signal, Weather Report, Stock Report and Light Music on Gramophone Records. **6.0,** Popular Music on Gramophone Records. **6.15,** Programme for Children. **7.0,** Light Music on Gramophone Records. **7.10,** Dublin Cattle Market Report. **7.20,** News Bulletin. **7.30,** Time Signal. **7.31,** French Lesson. **7.45,** Literary and Dramatic Talk. **8.0,** Concert of Music by Prof. O'Dwyer, The Station Sextet, conducted by the Composer. **8.30,** Pianoforte Solos by Irvine Lynch. **8.40** (approx.), The Station Orchestra. **9.20,** Pianoforte Solos by Grace Hughes. **9.40,** Song Recital. **9.55,** Station Orchestra. **10.30,** Time Signal, News, Weather Report and Close Down.

FECAMP

223 metres; 10 kW.—**6.0 to 7.0 p.m.,** Programme in English by the I.B.C. **6.0,** Concert. Orchestra: (a) Some of these Days, (b) It don't mean a Thing. Pianoforte Solo: She didn't say Yes. Vocal Duet:

Down among the Sheltering Palms. Orchestra: (a) Out of Breath. (b) Coney Island Washboard. Vocal Duet: We just couldn't say Good-bye. Orchestra: Aphrodite Waltz. Organ Solos: (a) Berceuse de Jocelyn (Godard), (b) In a Chinese Temple Garden (Ketelbey), (c) Melody in F (Rubinstein), (d) La Serenata (Braga), (e) Somewhere a Voice is calling (Tate), (f) Un peu d'amour (Silesu), (g) Love's Old Sweet Song (Molloy), (h) Bouncing Ball (Wark). **10.0** till Close Down, Programme in English by the I.B.C. Dance Music: Two little blue little Eyes; That's when I learned to love you; I love you, believe me I love you; Gipsy Dream Rose; My Heart belongs to the Girl who belongs to Somebody else; The Moon is low; Beside an Open Fireplace; Kitty from Kansas City; Reminiscing; My Cigarette Lady; I still remember; It must be you; Mary I love you; If I had a Girl like you; Just a little closer; You're just a Lover. **11.0**, Orchestral and Vocal Concert: Overture, The Caliph of Bagdad (Boieldieu). Songs: (a) O hear the Wild Winds blow (Mattei), (b) Song of Hybrias the Cretan (Elliot), (c) The Lifeboat Man (Drakeford), (d) In Sheltered Vale (Clarke); Prelude, The Witch's Ride and the Gingerbread Waltz from Hansel and Gretel (Humperdinck). **11.30**, Concert of Potpourri: Selection from The King of Jazz (arr. Somers); Wonder Bar (Katscher); Selection from (a) The Three Musketeers (Friml), (b) Show Boat (Kern). **12 Midnight**, Song Recital: Every little Girl he sees (Akst); Here in my Heart (Campbell); Nobody cares if I'm blue (Clarke); One Night alone with you (Jeffrey); O dem Golden Slippers (Bland); Songs I heard at Mother's Knee; Poor Old Joe (Foster); When it's Sunset on the Nile. **12.30 a.m. (Friday)**, Xylophone Solos: Schön Rosmarin (Kreisler); Hornpipe (Rosse); Parade of the Minutes; Liebesfreud (Kreisler); Looping the Loop (Easton); First Waltz (Durand); Marionette (Easton); Tarantella (Byng). **1.0**, Comedy Duets: Crystal Gazing; Afloat; Moonshine; In the Trenches; Fun on the 'Phone; The Police Station; Happy Days. **1.30**, Song Recital: Once aboard the Lugger; Hobo Bill's Last Ride; Foolish Facts; The Squire and the Deacon; There's another Empty Saddle; A High Silk Hat; Open up dem Pearly Gates; Climbing up dem Golden Stairs. **2.0**, Dance Music: I've gone and lost my little Yo-Yo; I do like to see a Game of Football; The Gag Song; Sing a New Song; Pagan Moon; The old Kitchen Kettle; Leave the Rest to old Man Moon; At Eventide; Speedway Sam; The Sun has got his Hat on; Dance of the Cuckoos; Singing in the Moonlight; When the Band goes marching by; Paradise; It's that Extra little Something; Strangers. **2.57**, I.B.C. Good-night Melody. **3.0**, Close Down.

FLENSBURG.—See **Hamburg.**

FLORENCE.—See **Turin.**

FRANKFURT

259 metres; 17 kW.; and **CASSEL, 245.9 metres.—4.0 p.m.**, See **Munich.** **5.15**, Economic Notes. **5.25**, Dialogue: The Influence of German Films on those of other Countries. **5.50**, Dialogue on Economics, Dr. Spitz and Jakob Schladt. **6.15**, Time, Programme Announcements, Weather and Economic Notes. **6.20**, Discussion between Dr. Rudolf Hoffmann and Professor Gustav Freytag. **6.45**, Radio Report on the Fourth Day of the International Ski-ing Championships in Innsbruck. **7.0**, Die himmelblaue Zeit—Operetta in Three Acts (O. Straus). **9.20**, Time, News, Weather and Sports Notes.

FREDRIKSSTAD.—See **Oslo.**

FREIBURG.—See **Stuttgart.**

GENEVA.—See **Radio-Suisse Romande.**

GENOA.—See **Turin.**

GLEIWITZ.—See **Breslau.**

GOTEBORG.—See **Stockholm.**

GRAZ.—See **Vienna.**

HAMAR.—See **Oslo.**

HAMBURG

Call ha (in Morse), **372 metres**; 1.5 kW. Relayed by **Bremen, 269.8 metres; Flensburg, 227.4 metres; Hanover, 566 metres**; and **Kiel, 232.2 metres.—6.0 p.m.**, Health Talk: The Causes of Backwardness in Children. **6.25**, Weather. **6.30**, Alwin Lau reads from his own Works. **7.0**, Gasparone—Operetta (Millöcker), relayed from the Operetta House. **9.10**, Time, Weather, Announcements, Sports Notes, and Police Report. **9.30**, Topical Talk. **9.40**, Concert, relayed from the Stadtschänke. **10.20**, Ice Report. **10.25**, Dance Music from the Curio Haus

HANOVER.—See **Hamburg.**

HEILSBERG

276.5 metres; 60 kW.; and **DANZIG, 453.2 metres.—12.5 to 1.30 p.m.**, Gramophone Concert of Classical and Light Music. In the interval at **12.20**, News. **2.0**, Exchange Rates and Market Prices. **3.0** (from **Danzig**), Talk for Young People: Treasures and Beauties of Spitzbergen. **3.30** (from **Danzig**), Concert by the Danzig Municipal Theatre Orchestra, conducted by Otto Selberg. Overture, Si j'étais roi (Adam); Suite, Chopin Suite (Herfurth); Intermezzo from A basso porto (Spinelli); Overture, The Water Carrier (Cherubini); Scherzo (Hartmann); Selection from Carmen (Bizet). **4.45**, Review of Periodicals. **5.15**, Market Prices. **5.20**, Ice Report. **5.30** (from **Danzig**), Agricultural Talk. **6.0**, Humour in Wind Instrument Music-Concert: Theme and Variations for Oboe, Clarinet, Horn, and Bassoon (Rossini); Einen Jux wollen sie sich machen—Potpourri for Oboe, Clarinet, Horn, and Bassoon (Friedemann); Humorous Quartet for Oboe, Clarinet, Horn, and Bassoon (Krüger). **6.30**, Elementary English Lesson. **6.55**, Weather and News. **7.5** (from **Danzig**), Der Erbförster—Drama (Otto Ludwig). **8.5**, Humorous Topical Review. **8.15**, Famous Singers on Gramophone Records: Galli Curci: The Titania Aria from Mignon (Thomas). Sigrid Onegin: Aria from The Huguenots (Meyerbeer). Chaliapin: The Golden Calf Rondo from Faust (Gounod). A. M. Guglielmetti: Aria from The Magic Flute (Mozart). Maria Nemeth: Aria from Il Seraglio (Mozart). Schlusnus: Cavatina from The Barber of Seville (Rossini). Marcel Wittrisch: Aria from The Barber of Seville (Rossini). Lotte Schöne: Bolero (Rossini). Eva Leoni: The Nightingale and the Rose (Saint-Saëns). Galli-Curci: Shadow Song from Dinorah (Meyerbeer). Sigrid Onegin: Leggiero invisible (Arditi). Anna Rosza and A. Ziliani: Duet from La Traviata (Verdi). Giovanni Inghilleri: Brindisi from Othello (Verdi). A. Bonci, Aurora Ettore, E. Rubadi, S. Baccaloni, and G. Meuni: Quintet from A Masked Ball (Verdi). **9.20** (approx.), Weather, News, and Sports Notes.

HILVERSUM

Announced **HUIZEN, 296.1 metres**; 20 kW. (7 kW. up to **4.40 p.m.**).—**11.40 a.m. to 1.40 p.m.**, Programme of the Catholic Radio Society (K.R.O.). **11.40**, Police Notes. **11.55**, Orchestral Concert, conducted by M. v.'t Wond: Overture, Semiramis (Rossini); Neu Wien (Strauss); Selection from La Source (Delibes); La Tzigane (Ganne); Molly on the Shore (Grainger); Shepherd's Hey (Grainger). **12.40 p.m.**, Variety Music on Gramophone Records. **12.55**, Concert (contd.), Ballet des parfums (Popy); Suite Phrygienne (Brusselmans); Dutch Dances (Siep); Au temps jadis (Montague); Carmen March (Fetras). **1.40** till Close Down, Programme of the Christian Radio Society (N.C.R.V.). **1.40**, Handwork Lesson. **2.40**, Programme for Women. **3.10 to 3.40**, Interval. **3.40**, Bible Reading and Sacred Music. **4.40**, 'Cello Recital: Sonata (Marcello); Sonata (Breval). A Gramophone Record: Sonata (Locatelli); Adagio from the Toccata in C (Bach); Après un rêve (Fauré). **5.25**, Handiwork Lesson for Young People. **5.55**, Talk. **6.25**, Dressmaking Lesson. **6.40**, Weekly Review. **7.10**, Police Notes. **7.25**, Religious Notes. **7.40**, Concert by the Arnhem Orchestral Society, conducted by Jaap Spaanderman: Soloist, Mme. de Rook-van Leeuwen (Songs): Selection from Les Indes galantes (Rameau); Cantata, Non sa che sia dolore (Bach). **8.10**, Talk. **8.40**, Concert (contd.). Selection from Rosamunde (Schubert). **8.55**, Talk (contd.). **9.25**, Concert (contd.). Air from Elijah (Mendelssohn); The Italian Symphony (Mendelssohn). **10.10**, Variety Music on Gramophone Records. **11.10** (approx.), Close Down.

HORBY.—See **Stockholm.**

HUIZEN

Announced **HILVERSUM, 1,875 metres**; 8.5 kW. Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.) Transmits at intervals from **11.40 a.m.**, Time Signal. **11.41**, Concert of Light Music. **1.55 to 2.10 p.m.**, Interval. **2.10**, Violin and Pianoforte Recital by Boris Lensky and Egbert Veen: Siciliana (Becce); Serenade espagnole (Chaminade-Kreisler); Nocturne (Boulanger); Cortège (Boulanger); Cantabile (Dambé). **2.40**, Talk. **3.25**, Popular Music on Gramophone Records. **3.40**, Talk. **4.10**, The Waldstein Sonata (Beethoven), by G. Verhoy. **4.40**, Stories for Children. **5.10**, Concert by the Small Station Orchestra, conducted by Nico Treep: March, Globe trotter (Leopold); Dance from Feramors (Rubinstein); Entr'acts (Gillet); Selection from the Daughter of the Regiment (Donizetti); Feuilles éparses, No. 2 (d'Ambrosio); En badinant (d'Ambrosio); Lotus Flowers (Ohlsen); Melody (Ganglberger); Zehn Minuten Schlager (Schneider). **6.10**, Sports Talk. **6.40**, Concert (contd.): Overture, Rip van Winkle (Planquette); L'Auvergnate (Ganne); Selection from The Bird Fancier (Zeller); Leuchtkäferchen Stelldichëin (Siede); Durchs Ziel (Translateur). **7.10**, English Lesson. **7.40**, Time Signal. **7.41**, News Bulletin. **7.45**, Light Concert by Hans Bund and his Orchestra: Soloists, Irene Ambrus and Luigi Bernauer. **8.40**, Recitations. **9.0**, Concert by the Station Orchestra, conducted by Nico Treep: Soloist. Geza Frid (Pianoforte): Overture, Rosamunde (Schubert); Ballet Music from Rosamunde (Schubert); Pianoforte Concerto in C, Op. 15 (Beethoven). **9.55**, Light Music on Gramophone Records. **10.10**, Concert (contd.): Einzug des Schneekönigs (Noack); Dwarf Patrol (Rinaldi); Melody (Benatzky); Caravan (Bayer); Serenade (Fauchy); Aufzug der Stadtwache (Jessel). **10.35**, Light Music on Gramophone Records. **10.40**, News Bulletin. **10.45**, Concert of Light Music by Hans Bund and his Orchestra. **11.40** (approx.), Close Down.

INNSBRUCK.—See **Vienna.**

KALUNDBORG.—See **Copenhagen.**

KAUNAS

1,935 metres; 7kW.—**6.30 p.m.**, Popular concert. **7.10**, Talk for Gardeners. **7.30**, Variety Concert. **8.0**, Esperanto Talk. **8.20**, Evening Concert. **9.30** (approx.), Close Down.

KIEL.—See **Hamburg.**

KLAGENFURT.—See **Vienna.**

KOSICE.—See **Prague.**

LAHTI

1,796 metres; 40 kW.; and **HELSINKI, 368.1 metres.—4.0**, Concert by the Helsinki Orchestra, conducted by Dr. van Gilse van der Pals: Symphony in D (Haydn); Spring Song (Sibelius); Valse triste (Sibelius); Overture, The Hebrides (Mendelssohn). **4.50**, Press Review in Finnish. **4.59**, Time and Weather. **5.10**, Press Review in Swedish. **5.15**, Talk. **5.40**, Song Recital. **6.5**, Talk. **6.30**, Pianoforte Recital of his own Music by Selim Palmgren. **6.55**, Recitations. **7.15**, Orchestral Concert, conducted by Erkki Linko: Melodies from Coppélia (Delibes); Sous les tilleuls (Massenet); Overture, Si étais roi (Adam). **7.45**, News in Finnish. **8.0**, News in Swedish.

LANGENBERG

473 metres; 60 kW.—**12 Noon**, Concert, conducted by Eysoldt: Overture, The Water Carrier (Cherubini); Selection from Faust (Gounod); Cavatina (Raff); Ballet Suite from The Swan Lake (Tchaikovsky); Minuet (Bolzoni); Hindu Dance (Bizet); Lyric Scene (Huppertz); Romantic Intermezzo (Huppertz); Spielzeug und Waldnixen (Ertl); Potpourri, from A to Z (Geiger). **1.0 p.m.** (in an interval), News. **1.30**, Sponsored Programme with Gramophone Records. **2.30**, Exchange and Time Signal. **2.50**, Fairy Tales for Children. **3.20**, Notes on the Broadcasts to Schools. **3.30**, Educational Talk. **4.0**, Concert, conducted by Wolf: Overture, Preciosa (Weber); Prairie Roses (Poldini); Waizer-Freude (Provaznik); Selection from Lucia di Lammermoor (Donizetti); Oriental Suite, Reminiscences of Cairo (Armandola); Tonwellen-Potpourri (Mannfred). **5.0**, Talk: The History of the German Language. **5.25**, French Conversation. **5.45**, Weather, Time, Exchange and Sports Notes. **6.0**, Review of Books on the History of the Nations. **6.20**, Talk: The Feminist Movement. **6.30**, Talk: Unemployment and Unemployment Benefit in England. **6.55**, First General News. **7.0**, Lebende Schallplatten-Radio Fantasy (Martin Dey). **9.5**, News Bulletin. **9.30**, Serenade and Dance Music. **11.0** (approx.), Close Down.

LAUSANNE.—See **Radio-Suisse Romande.**

LEIPZIG

389.6 metres; 120 kW.; and **DRESDEN, 319 metres.—12.15 p.m.**, Spanish Music on Gramophone Records, followed by Exchange Quotations. **1.0**, Film Review. **1.30**, Talk for the Unemployed. **2.35**, Economic Notes. **3.0**, Concert by the Leipzig Symphony Orchestra, conducted by Willy Steffen: Overture in C Minor, Op. 27 (Jadassohn); Ariel's Song from The Tempest (Braunfels); Four Dance Melodies (Niemann): (a) Entrée, (b) Sarabande, (c) Minuet, (d) Pavane; Scherzo, Op. 8, Ein eleusisches Fest (Ambrosius); Waltz, Op. 25, No. 2 (Fuchs); Orchestral Suite, Op. 3 (Wedig); Two Military Marches (Elgar); Overture, Die Fledermaus (Joh. Strauss). **4.30**, Weather and Time. **4.35 to 4.50**, Interval. **4.50**, Economic Notes. **5.0**, Talk on Hygiene. **5.15**, Talk on Taxation. **5.30**, Spanish Lesson. **5.50**, Talk: At the Graves of Famous Musicians in Dresden. **6.15**, A Discussion on the Present Crisis. **7.0**, Gramophone Concert: Fantasias on a Theme by Verdi (Rehberg); Songs (Brahms): (a) In stiller Nacht, (b) Sandmännchen; Allegro from the Concerto in D Minor for Two Violins (Bach); Prelude to La Traviata (Verdi); Folk Song, Carmela; Overture, Romeo and Juliet (Tchaikovsky); Songs: (a) Maria, Mari (Di Capua), (b) Sentinella (De Curtis); Waltz, Roses from the South (Joh. Strauss); Songs from Opera by Franz Völker. **8.0**, Topical Talk. **8.15**, Hölderlin—Recitations by a Verse-Speaking Choir. **9.15**, News and Gramophone Report on the Fourth Day of the International Ski-ing Championship at Innsbruck.

LINZ.—See **Vienna.**

LJUBLJANA

574.7 metres; 2.5 kW.—**5.30 p.m.**, Italian Lesson. **6.0**, Talk on Economics. **6.30**, The Letter Box. **7.0**, Relay from the Opera House. **9.0**, Time, News and Popular Music on Gramophone Records.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—**7.30 p.m.**, Radio Gazette for Lyons and the South-East. **8.30**, Variety Concert of Music, by Léon Raiter, with Accordion Solos by the Composer. After the Concert, News Bulletin.

MADRID

ARANJEUZ (EAQ), 30.43 metres; 20 kW.—**10.30 p.m.**, Light Music. **10.45**, Radio Chronicle. **11.0**, Concert of Popular Music. **11.35**, Talk. **11.40**, Light Music. **12 Midnight** (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 424.3 metres; 2 kW.—**7.0 p.m.**, Chimes, Exchange Quotations, Programme for Children and Request Gramophone Records. **8.15**, News Bulletin. **8.30 to 9.0**, Interval. **9.0**, Linguaphone English Lesson. **9.30**, Chimes and Time Signal. **9.35** (approx.), Educational Talk, followed by Band Concert, conducted by Martin Domingo, relayed from the Hotel Nacional. **11.45**, News Bulletin. **12 Midnight**, Chimes and Close Down.

MALMO.—See **Stockholm.**

MILAN.—See **Turin.**

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—**5.0 p.m.**, Talk. **5.15**, See **Prague.** **5.30**, German Transmission: Talk on Wagner with Gramophone Illustrations. **6.0**, See **Prague.** **6.5**, See **Brno.** **6.20** till Close Down, See **Prague.** **9.35** (approx.), Close Down.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—**4.0 p.m.**, News. **4.10**, Announcements. **4.30**, Concert. **5.30**, Evening Concert or a Relay. **8.0**, Review of the Week and Answers to Correspondents in French. **8.55**, Time. **9.5**, Press Review.

MOTALA.—See **Stockholm.**

MUHLACKER.—See **Stuttgart.**

MUNICH

533 metres; 60 kW. Relayed by **Augsburg** and **Kaiserslautern, 560 metres**; and **Nürnberg, 239 metres.—4.0 p.m.**, Orchestral Concert, conducted by Erich Kloss: Overture, Die Matrosen (Flotow); Paraphrase on Musica proibita (Gastaldon-Blüthgen); Selection from I Pagliacci (Leoncavello); Waltz, Faschingskinder (Zichrer); Krähwinkler Landsturms Waehtparade (Hefner); Suite, Fasching (Schmalstich); Dance of the Merry Mascots (Ketelbey); Czardas (Zehetmeier); March, Soldatenliebe (Ailbout). **5.15** (from **Nürnberg**), Talk on Housing. **5.35**, Agricultural Talk. **5.55**, Time, Weather, and Market Prices. **6.5**, Talk: Wagner and Posterity. **6.25** (from **Nürnberg**), Concert, conducted by Carl Friedemann. In the interval (from **Munich**), Recital of Yugoslav Folk Songs. **7.20**, The Death of the General—Historical Drama on the Death of Count von Tilly (Alois Johannes Lippl), with Music by the Station Orchestra, the Station Male Voice Choir, and a Boys' Choir. **8.30**, The Power of Song (to Verses by Schiller), Op. 87, for Soloists, Choir, and Orchestra (Desiré Thomassin). The Station Orchestra, the Augmented Station Choir, Henny Wolff (Soprano) and Georg Hann (Baritone). **9.5**, Programme to be Announced. **9.20**, Time, Weather, News, and Sports Notes.

NAPLES.—See **Rome.**

NOTODDEN.—See **Oslo.**

OSLO

1,083 metres; 60 kW. Relayed by **Fredrikstad, 365.8 metres; Hamar, 574.7 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres**; and **Rjukan, 447.1 metres.—4.0 p.m.**, Orchestral Concert, relayed from the Continental Hotel. **5.0**, German Lesson. **5.30**, Studio Service. **6.0**, Announcements, Weather and News. **6.30**, English Song Recital by the Pauline Hall Quartet. **7.0**, Time Signal. **7.1**, Agricultural Talk. **7.30**, Pianoforte Recital by Anton Meyer, relayed from **Stavanger (240.6 metres)**: Seven Pieces (Chopin): (a) Prelude in B Minor, (b) Nocturne in C Minor, (c) Waltz in A Minor, (d) Waltz in A Flat, (e) Mazurka in F sharp Minor, (f) Mazurka in A Minor, (g) Fantaisie-Impromptu. **8.0**, Song Recital by Johannes Bergh Hansen (Baritone): Aria from a Cantata (Bach); Recitative and Aria from The Messiah (Händel); Norwegian Melodies; Melody (Grieg); Skal gjenta ha det (Almaes); Swedish Melodies. **8.25**, Recitation by Mlle. Constance Stoltenberg. **8.45**, Weather and News. **9.0**, Topical Talk. **9.15**, Relay of European Stations. **11.0** (approx.), Close Down.

OSTERSUND.—See **Stockholm.**

PALERMO

542 metres; 3 kW.—**7.0 p.m.**, Announcements, Agricultural Notes, and Giornale Radio. **7.30**, Time Signal and Announcements. **7.45**, Variety Concert. **8.30**, Il bridge delle signore mature — Sketch (Lucio D'Ambra). **9.0**, Variety Concert (contd.). **9.55**, News Bulletin.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW. Time Signals (on **2,650 metres**) at **9.26 a.m.** and **10.26 p.m.** (Preliminary and 6-dot Signals).—**5.45 p.m.**, Le Journal Parlé. **7.20**, Weather Report. **7.30**, Gramophone

Concert: Part I, Chopin Programme: Concerto in E Minor for Pianoforte and Orchestra; Fantasia in C Sharp Minor; Mazurka in B Flat; Finale, La Nuit ensorcelée. Part II: Variety Music. Selection from The Daughter of the Regiment (Donizetti); The Dairymaid's Dream (Libinski); Serenade (Toselli); Selection from The Land of Smiles (Lehár); Le royaume du berger (Blanquy); Tyrolienne de Noël (Saint-Servan); Waltzes (Waldteufel); (a) Charme de sirènes, (b) Mon rêve; Hunting Horn Music: (a) Le Moulin de la Vierge, (b) Les échos des Vosges, (c) Le clocher de Dampierre; Pasodoble, Tierra hispana (Sentis); Old Comrades (Teike); March, The Gladiators' Farewell (Blankenburg). 9.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—**7.0 to 9.0 a.m.,** Probable Relay of the Test Match from Australia. **6.45 p.m.,** Le Journal Parlé. **7.0,** Programme for Children. **7.30,** Sponsored Concert. **8.0,** Agricultural Talk. **8.15,** Interval. **8.30,** Pêcheurs d'ombre—Play (Jean Sarment). **10.0,** Concert by the Alexander Schriabin Russian Orchestra, relayed from the Berry. **10.30,** News.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—**6.45 a.m.,** Physical Culture. **7.30,** Weather and Physical Culture (contd.). **7.45,** Gramophone Records. **8.0,** Press Review and Weather. **12 Noon,** Protestant Address. **12.30 p.m.,** Orchestral Concert: The Jupiter Symphony (Mozart); Songs: (a) Aria from Lohengrin (Wagner), (b) Aria from Hérodiade (Massenet), (c) Aria from Sappho (Massenet), (d) Aria from Tosca (Puccini); The Blue Waltz (Margis); Selection from Coups de Roulis (Messager); Songs (Chepfer) (a) Un Cocktail parisien, (b) La Marraine du poilu de Saizerais; Selection from Manon (Massenet). **1.0,** Exchange, News, and Weather. **1.30,** Exchange. **2.0,** Exchange. **3.45,** Exchange and Market Prices. **6.10,** Agricultural Talk. **6.30,** Popular Music on Gramophone Records. **6.45,** Legal Talk. **7.0,** Talk: The French Revolution—the Opening of the States General. **7.20,** Orchestral Concert: Overture, Lalla Roukh (David); Jota (Cools); Aphrodite (Février); A l'allemande (Gédalge). **7.45,** Review of the German Press. Commercial Prices, and News. **8.0,** Dramatic Programme: Salons in the Olden Days—Chez Madame de Girardin, (Gabrielle Réval), with the Collaboration of Marcelle Schmitt, Mme. Nordmann, Léon Kartun (Pianoforte), and M. Boufard. In the intervals at **8.30,** News, Weather, and Sports Notes; and at **8.40,** Review by Christophe. **9.15,** Press Review and News. **9.30,** Brahms Pianoforte Recital by Léon Kartun: Variations and Fugue on a Theme by Händel; Capriccio in B Minor; Rhapsody in G Minor. **10.0,** Light Music on Gramophone Records: Français (Mauricet); Les Anomalies de l'existence (Mauricet); Souvenir (Perzov); Two Songs from La Basoche (Messager); Chéri (Willhite); Our Jack's Back (Sarony); Little White Lies (Donahlson).

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW. Relayed by **W8XK** on **48.86 metres** and **25.27 metres.**—**9.0 p.m.,** Work-a-day Thoughts. **9.5,** Business News. **9.15,** Programme to be announced. **9.30,** Weather Report. **9.32,** Market Reports. **9.45,** Pianoforte Interlude. **9.50,** David Lawrence Dispatch. **9.55,** KDKA Artist Bulletin. **9.58,** Programme Announcements. **10.0,** Programme to be announced. **10.30 to 11.15, New York** Relay. **10.30,** Singing Lady. **10.45,** Little Orphan Annie. **11.0,** Maude and Cousin Bill. **11.15,** Time Signal. **11.16,** Weather Report. **11.17,** Traberry Sport Review. **11.22,** Press News Reeler. **11.27,** Strange Facts. **11.29,** Temperature Report. **11.30,** KDKA Orchestra. **11.45 to 12.30 a.m. (Friday), New York** Relay. **11.45,** To-day's News, by Lowell Thomas. **12.0 Midnight,** Pepsodent Amos 'n' Andy. **12.15 a.m.,** Carson Robison and his Barbasol Buckaroos. **12.30,** Westinghouse Parade. **1.0 to 3.45, New York** Relay. **1.0,** Cape Diamond Lights. **1.30,** Time Signal and Rin Tin Tin Thrillers. **1.45,** Thurston, the Magician. **2.0,** Death Valley Days. **2.30,** Len Joy's Dancing Strings. **3.0,** Mr. Twister. **3.15,** Wilfred Glenn (Bass). **3.30,** Ilo May Bailey and Orchestra. **3.45,** Bradley Kincaid. **4.1,** Teaberry Sport Review. **4.11,** Temperature Report. **4.12,** Weather Report. **4.13,** KDKA Artist Bulletin. **4.15,** Press Last Minute News Flashes. **4.20,** Heart Songs by Louise Frayne. **4.30,** Henry Halstead and his Californians. **5.0,** Hotel McAlpin Orchestra, from **New York.** **5.30,** Time Signal and Goodnight.

PORSGRUND.—See **Oslo.**

PRAGUE

488.6 metres; 120 kW.—**3.10 p.m.,** See **Brno. 4.10,** Talk on Economics. **4.20,** Programme for Children relayed from **Brno. 4.50,** Light Music on Gramophone Records. **5.5,** Agricultural Talk. **5.15,** Talk for Workers. **5.25,** News in German. **5.30,** German Transmission: Educational Talk and Programme for Workers. **6.0,** News. **6.5,** Elementary English Lesson. **6.20,** Talk: Illnesses in Winter. **6.35,** Radúz and Mahulena—Play in Four Acts (Zeyer) with Music by J. Suk. In the Interval, News, Press Review and Sports Notes, and at **8.0** and **9.0,** Time Signals. **9.35** (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; **LAUSANNE, 650 metres;** and **GENEVA, 760 metres.**—**5.0 p.m.** (from **Geneva**), Sports Talk. **5.20** (from **Geneva**), Esperanto Lesson. **5.35** (from **Lausanne**), Italian Lesson. **6.0** (from **Lausanne**), Weather and News. **6.15** (from **Lausanne**), Answers to Correspondence. **6.30** (from **Lausanne**), Talk on the Theatre. **7.0** (from **Geneva**), Nach dir, Herr, verlanget mich—Cantata No. 150 (Bach), by the Bach Society of Geneva. Soloists: Gabrielle Bodet (Soprano), Nelly Gentilla (Contralto), Ernest Bauer (Tenor), Joseph Lombard (Bass), Charles Koller (Harpsichord), and Bernard Reichel (Organ). **7.45** (from **Geneva**), Talk. **8.0** (from **Geneva**), Concert by the Geneva Wind Instrument Society: Trio for Pianoforte, Oboe and Bassoon (Poulenc); Rhapsody (Jongen); Quintet in E Flat for Pianoforte, Oboe, Clarinet, Bassoon and Horn (Mozart). **9.0,** News and Weather. **9.10** (from **Geneva**), Report on the Work of the League of Nations. **9.25** (approx.), Close Down.

RIGA

525 metres; 15 kW.—**4.30 p.m.,** Sonata in C Minor for Violin (Biber). **5.0,** Wireless Notes. **5.30,** English Lesson. **6.0,** Weather Report. **6.5,** Orchestral Concert: Selection from (a) The Flower of Hawaii (Abraham) and (b) White Horse Inn (Benatzky); Waltz, Gold and Silver (Lehár); Potpourri of Latvian Songs; Polka Potpourri (Lindemann). **7.0,** News. **7.20,** Song Recital by Olga Ryss: A la jeunesse (Darzina); Fermes yeux et souris (Wihtols); Songs (Suchow); Aria from The Force of Destiny (Verdi); Song from La Gioconda (Ponchielli). **7.45,** Orchestral Concert. **8.0,** Weather and News. **8.30,** Italian Music on Gramophone Records: Prelude and Airs from Cavalleria rusticana (Mascagni); Symphonic Poem, La Fontane di Roma (Respighi); Air from I Pagliacci (Leoncavallo); Monologue from Rigoletto Verdi); Finale from the Aida (Verdi). **9.30** (approx.), Close Down.

RJUKAN.—See **Oslo.**

ROME

Call 1RO, 441 metres; 50 kW. Relayed by **Naples, 319 metres;** and **2RO, 25.4-80 metres.**—**7.0 a.m.,** Gymnastics. **7.15 to 7.30,** Giornale Radio and Announcements. **11.30,** Weather and Light Music on Gramophone Records. **12 Noon,** Time and Announcements. **12.2 p.m.,** Humorous Programme. **12.5 to 1.15,** Orchestral Concert. In the interval from **12.30 to 12.45,** Giornale Radio and Exchange. **3.45,** Programme for Children. **4.10,** Announcements. **4.15,** Exchange and Giornale Radio. **4.30 to 5.15,** Orchestral Concert: Danse barbare (Brusselmans); Taote (Carducci); Selection from Le maschere (Mascagni); Foxtrot tragico (Castelnuovo-Tedesco); Serenata a Seny (Culotta); Harlequin (Erwin); Sognando te (Gaudiosi); Only your Love (Lopez). **6.0,** Giornale Radio. **6.10 (Naples),** Shipping and Sports Notes. **6.15,** Agricultural Report and Announcements. **7.0,** Time and Announcements. **7.2,** Talk. **7.15,** Variety Music on Gramophone Records. **7.20,** Talk for the Housewife. **7.30,** Sports Notes and Tourist Report. **7.45,** Symphony Concert, conducted by Oscar Szita. Soloist: Germano Arnaldi (Pianoforte). Prelude (Järnefeldt); The Second Symphony (Sibelius); Talk on Literature and Art. Pianoforte Solos: Suite, Pohialaisia (Madetoja); Two Pieces for Orchestra (Sibelius); (a) Legend, Satu; (b) Finlandia. **9.55,** News.

SALZBURG.—See **Vienna.**

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 379.5 metres; 50 kW. Relayed at intervals by **W2XAF** on **31.48 metres** and by **W2XAD** on **19.56 metres.**—**12 Midnight,** Jane Froman, from **New York. 12.15 a.m. (Friday),** Stock Reports. **12.30** till Close Down, **New York** Relay. **12.30,** Regimentalists. **12.45,** The Goldbergs. **1.0,** Fleischmann Hour. **2.0,** Captain Henry's Show Boat. **3.0,** Lucky Strike Hour.

SCHWEIZERISCHER LANDESSENDER

BEROMUNSTER, 459 metres; 60 kW.; **BASLE, 243.1 metres;** and **BERNE, 245.9 metres.**—**9.20 a.m.,** Broadcast for Schools: Radio Report from an Animal's Hospital. **9.50 to 11.28,** Interval. **11.28,** Time Signal from Neuchâtel Observatory. **11.30,** Weather and News. **11.40,** Popular Music on Gramophone Records. **12.35 p.m.,** Weather and Exchange. **12.45 to 2.30,** Interval. **2.30** (from **Zürich**), Programme for Women. **3.0,** Concert by the Radio Orchestra. **4.0,** Light Music on Gramophone Records. **4.30,** Weather. **4.35 to 5.30,** Interval. **5.30** (from **Basle**), Talk: How to make a Will. **6.0,** Time, Weather and Traffic Report. **6.15** (from **Basle**), Elementary Italian Lesson. **7.0,** Concert by the Radio Orchestra. **7.30** (from **Basle**), Recital of Modern Flute Music by Hermann Zauke of Breslau, Eduard Ehrsam at the Pianoforte. **8.10,** Concert by the Radio Orchestra. **8.30,** Weather and News. **8.40** (from **Basle**), Folk Songs to the Lute by Manuela da Costa. **9.15** (approx.), Close Down.

SOTTENS.—See **Radio-Suisse Romande.**

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by **Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,348 metres; Ostersund, 770 metres;** and **Sundsvall, 542 meters.**—**4.5 p.m.** (from **Sundsvall**), Studio Service. **4.30,** Programme for Children. **4.45,** Popular Music on Gramophone Records. **5.45,** Elementary English Lesson. **6.15,** Weather and News. **6.30,** Talk on Economics, relayed from **Malmö (231 metres). 7.0,** Song Recital by Karin Mark-Marcus. **7.15,** Play in Four Acts (J. J. Bernard). **8.45,** Weather and News. **9.0,** Chamber Music, relayed from **Malmö.** Ilmari Hannikainen (Pianoforte), Arvo Hannikainen (Violin), and Taano Hannikainen (Cello): Moderato assai from the Pianoforte Trio in A, Op. 7 (Knula); Finnish Folk Melodies, for Pianoforte, Violin, and 'Cello (Hannikainen); Pianoforte Trio in A Minor (Ravel). **10.0** (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—**11.30 a.m.,** Classical Music on Gramophone Records. **12.45 p.m.,** News Bulletin. **1.0,** Time and Exchange. **1.5,** Light Music on Gramophone Records. **2.0,** Programme for Children. **3.0 to 4.15,** Interval. **4.15,** Elocution Lesson. **4.30,** Programme for Children, relayed from **Bordeaux-Lafayette. 6.0,** Talk: The Louvre. **6.15,** Talk for Women. **6.30,** Dance Music: Onestep, T'en fais pas Rosine; Slow Foxtrot, Tantalising Baby; Foxtrot, Lies; Waltz, Ewiger Mai strahlt in Hawaii; Foxtrot, Hoch Caroline; Foxtrot, I'm forgetting myself for you; Tango, Lass' uns von Liebe sprechen; Foxtrot, Nobody's Sweetheart; When it's Sleepy Time down South; Moonlight on the Alster; Foxtrot, Tom Thumb's Drum; Foxtrot, Maria, my own; Tango, It's an Old Spanish Tango; Foxtrot, Say; You can make my Life a Bed of Roses; Foxtrot, Polynesian Night; La Manilla. **7.30,** Time and News. **7.45,** Gramophone Records: Overture, Fingal's Cave (Mendelssohn); Waltz Suite (Brahms); Finale and Ride of the Valkyries from The Valkyries (Wagner). **8.25,** Lottery Results. **8.30,** Orpheus—Opera (Gluck). **10.30** (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and **FREIBURG, 570 metres.**—**12.30 p.m.,** Concert from **Langenberg. 1.0,** Sponsored Concert. **1.30,** Spanish Lesson. **2.0,** Elementary English Lesson. **2.30,** Programme for Young People. **3.35,** Reading. **4.0,** See **Munich. 5.15,** Time, Weather, and Agricultural Notes. **5.25,** Talk: The Life and Work of a Reichswehr Soldier. **5.50,** Agricultural Talk relayed from **Karlsruhe. 6.15,** Time and News, followed by Report of the South-West German Produce Market relayed from **Mannheim. 6.25,** Recital of Old Melodies by a Double Quartet: Aus der Jugendzeit; Dort droben in jenem Tale; Das stille Tal; Das Abendglöcklein; Mei Mutter mag mi net; Herzerl, was kränket dich so sehr; Schön ist die Jugend. **6.45,** Report on the Fourth Day of the International Ski-ing Championship, relayed from **Innsbruck. 7.0,** See **Frankfurt. 9.20,** Time, News, Weather, and Programme Announcements. **9.40,** Final Report on the Six Days' Racing, relayed from the Festhalle, Frankfurt. **9.50,** Concert of Music by Ewald Strässer; Helene Geray-Scheel (Songs) and Philipp Dreisbach (Clarinet); Songs: (a) Nachtgesang (Bölm), (b) Worte am Abend (Müller), (c) Ruhelos (Gothis), (d) Wenn ich wüsste (Mieget), (e) Julinacht (Bölm); Clarinet Sonata. **10.30** (approx.), Close Down.

SUNDSVALL.—See **Stockholm.**

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—**6.0 p.m.,** News Bulletin. **6.15,** Septet (Saint-Saëns). **6.30,** Programme for Children. **7.0,** Melodies from Sound Films. **7.15,** Racing Results, Market Prices and News. **7.25,** Local News Bulletin. **7.30,** Music by a Viennese Orchestra. **8.0,** Popular Melodies. **8.15,** Light Music by an Argentine Orchestra. **8.30,** Extracts from Don Quichotte—Opera (Massenet). **9.0,** Accordion Music. **9.15,** Orchestral Concert: Marche joyeuse (Chabrier); Lehár Potpourri (Hruby); The Flight of the Bumble Bee (Rimsky-Korsakov); Wedding March (Mendelssohn); Verschmähte Liebe (Lincke). **9.45,** Light Orchestral Concert. **10.15,** North African News. **10.30,** Concert for Listeners in Morocco: Overture, Masaniello (Auber); Air from L'Attaque du Moulin (Bruneau); Wiener Madln (Ziehrer); Chez le Juge (Bach-Lavernes); Mon Fétiche (Vacher). **11.0,** Orchestral Concert: Selection from (a) Manfred (Schumann), (b) Benvenuto Cellini (Berlioz), (c) The Tales of Hoffmann (Offenbach), (d) Philémon et Baucis (Gounod). **11.30,** Programme in English by the I.B.C.: Concert of Light Music; Czardas; Quintet, Wrap your Troubles in Dreams; Baritone Solo, Eleanore; Quintet, Come to me; Poschelej; Pianoforte and Organ Duet, Clockwork; Soprano Solo, Bohemia; The Clock is Playing. **12 Midnight,** Weather and Announcements. **12.5 a.m. (Friday),** Orchestral Concert of Variety Music. **12.30** (approx.), Close Down.

TRIESTE

247.7 metres; 10 kW.—**4.10 p.m.** till Close Down, See **Turin.**

TRONDHEIM.—See **Oslo.**

TURIN

273.7 metres; 7 kW. Relayed by **Milan, 331.5 metres; Genoa, 312.8 metres;** and **Florence, 500.8 metres.**—**4.10 to 5.0 p.m.,** Orchestral Concert: Overture, Poet and Peasant (Suppé); Barcarolle from Silvano (Mascagni); Overture, Francesca da Rimini (Zandonai); Gavotte from Rolando (Leoncavallo); Overture, The Italian Girl in Algiers (Rossini). **5.0 to 5.35,** Interval. **5.35,** Giornale Radio, Agricultural Report and Dopolavoro Notes. **6.0,** Light Music on Gramophone Records. **6.25,** Tourist Talk. **6.30,** Time, Announcements and Light Music on Gramophone Records. **7.0,** Giornale Radio, Weather, and Variety Music on Gramophone Records. **7.20,** Sponsored Talk for Housewives. **7.30,** Reading from the Twenty-Second Canto of the Inferno. **8.0,** Relay of an Opera. In the intervals: Talk, Theatre Notes and Giornale Radio.

VATICAN CITY

19.84 metres (Morning), and **50.26 metres** (Evening); 10 kW.—**10.0 to 10.15 a.m.,** Religious Information in French. **7.0 to 7.15 p.m.,** Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by **Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 245.9 metres;** and **Salzburg, 218.5 metres.**—**4.5 p.m.,** Concert by the C. M. Winternitz Orchestra. Overture, Der Göttergatte (Lehár); Waltz from The Gipsy Princess (Kálmán); Selection from The Geisha (Jones); Valse Musette (Winternitz); La lettre de Manon (Gillet); Two Pieces (R. Strauss): (a) Slow Foxtrot, Nadine, (b) The Rumba; Kleine Serenade (Grünfeld); Potpourri of Johann Strauss Operetta Music (Schlögl). **5.20,** Talk for Women: Women in Public Life. **5.40,** Talk: Capitalism in the Crisis. **6.5,** Talk for the Tenth Anniversary of the Death of Röntgen: How the Röntgen Ray came to be discovered. **6.35,** Time, Weather, and Programme Announcements. **6.45,** Report on the International Ski-ing Championships at Innsbruck. **7.0,** Talk: Observations on Landscape. **7.20,** Concert by the Josef Holzer Orchestra. Soloists: Willy Drahozal (Violin) and Ernst Reindl (Bassoon). Overture, Boccaccio (Suppé); Walz, Samt und Seide (Ziehrer); Violin Solo: Airviemois (Gluck); Potpourri, Goldene Herbstschenzeit (Manfred); Bassoon Solo: Baby-Bär-Ständchen (Mayer); Waltz, Lalo (Beeth); Polka, Marianka (Wangel); Intermezzo Appadachia (Wichtl); Potpourri (Morena). **8.50,** News, Weather and Announcements. **9.5,** Snow Report. **9.10,** Dance Music by the Fred Clement Orchestra, relayed from the Grabencafé.

WARSAW

1.411 metres; 120 kW.—**11.35 a.m.,** Concert for Schools. Naval Propaganda. The Philharmonic Orchestra, conducted by C. Wilkomirski, and a Village Orchestra conducted by S. Kazuro. Soloist: S. Zmigrod-Fedyczkowska (Songs). Overture, The Legend of the Baltic (Nowoiejski); Three Songs from Legend of the Baltic (Nowoiejski); Two Pieces from the Cycle Maritime Sketches (Joteyko); Address: Poland's Return to the Sea; Songs; Polonaise in A (Chopin); Mazurka from Halka (Moniuszko). **1.0 to 2.10,** Interval. **2.10,** News. **2.25,** Economic Report. **2.25,** Variety Music on Gramophone Records. **2.35,** Talk: Saving in Poland and Abroad. **2.50,** Light Music on Gramophone Records. **3.25,** Intermediate French Lesson. **3.40,** Talk: Chinese Poetry. **4.0,** French Chamber Music on Gramophone Records: Feux d'Artifice (Debussy); Songs, Les Amants séparés (Roussel); Chant des sirènes (Honegger); Berceuse des sirènes (Honegger); Sonatina (Ravel); Jeux d'eau (Ravel). News in the interval. **4.49,** Topical Talk. **4.55,** Programme Announcement. **5.0,** Light Music from the Cristal Restaurant. News in the interval. **6.0,** Miscellaneous Items. **6.20,** Agricultural Report. **6.30,** Literary Programme. **6.45,** Radio Journal. **7.0,** Concert by the Radio Orchestra, conducted by S. Navrot. Soloist: S. Miller (Soprano). Ballet Suite (Armandola); Romantic Overture (Kéler-Béla); Three Songs; Potpourri (Manfred); Two Songs from Polenblut (Neubal); Soprano Solos (a) Waltz, Tales from the Vienna Woods (Johann Strauss), (b) Song (Tagliafico). (c) English Waltz, Spring's Awakening (Henderson); Humoresque (Levine); Overture, La Belle Hélène (Offenbach). In the interval, Sports Notes and Radio Journal. **8.30,** A Sketch. **9.15,** Dance Music from **Cracow (312.8 metres). 9.55,** Aviation Weather Report and Police Notes. **10.0,** Dance Music from the Café Gastronomja.

ZURICH.—See **Schweizerischer Landessender.**

FEB. 9th **THURSDAY** *continued*

FRIDAY

FEBRUARY THE TENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL	A light classical concert. Mr. St. John Ervine: "The Theatre." Military Band concert. Mr. S. P. B. Mais: "S.O.S." Orchestral concert.
LONDON REGIONAL	Orchestral concert. "Hassan," a play by James Elroy Flecker, Part 2. Will C. Pepper's White Coons' Concert Party.
MIDLAND REGIONAL	Orchestral concert. London Regional programme.
NORTH REGIONAL	Organ music. Orchestral concert.
WEST REGIONAL	A Welsh Medley. National programme.
SCOTTISH REGIONAL	Orchestral concert. Song and pianoforte recital. Organ music.
BELFAST	Folk Tunes, orchestral concert.

ABROAD

BARI	Concert of opera music.
BRUSSELS (No. 2)	Gala concert by the Station Symphony Orchestra, conducted by M. Meulemans.
HEILSBERG	Wagner concert by the Königsberg Opera House Orchestra.
LANGENBERG	Oriental programme.
PALERMO	Old and new dance music.
STUTTGART	The Philharmonic Orchestra, conducted by Emil Kahn.
TURIN	Symphony concert, conducted by D. Amfitheatrof.

BARCELONA

RADIO-BARCELONA, Call EAJ1, 348.8 metres; 8 kW.—**6.0 p.m.,** Trio Concert. **7.0,** Request Gramophone Concert. **7.30,** Exchange Quotations. **8.0,** Popular Music on Gramophone Records and News. **9.0,** Chimes from the Cathedral, Weather, Messages to Seamen, Exchange Quotations and Market Prices. **9.10,** Concert by the Station Orchestra: March (Freil); Nocturne (Coppola); Three Popular Romanian Dances (Béla Bartok); Dance (Gregh). **9.30,** A Musical Comedy, relayed from **Madrid (EAJ7). 11.0,** (in an interval), News.

BARI

269.8 metres; 20 kW.—**7.0 p.m.,** Agricultural Notes, Tourist Talk and Announcements. **7.20,** Giornale Radio and Weather. **7.30,** Time and Announcements. **7.35** (approx.), Concert of Opera Music: Soloists: Lino d'Angelo (Baritone) and Maria De Santis Bruno (Soprano); Overture, Si j'étais roi (Adam); Selection from Aida (Verdi); Baritone Solos: (a) O Carlo, ascolta, from Don Carlos (Verdi), (b) Air from L'Africaine (Meyerbeer); Soprano Solos: (a) Aria, O mamma, mia mammina, from Il piccolo Marat (Mascagni), (b) Musette's Waltz from La Bohème (Puccini); Selection from The Pearl Fishers (Bizet); Overture, Der Freischütz (Weber); Baritone Solo: Cruda funesta smania, from Lucia di Lammermoor (Donizetti); Soprano Solo, from Madame Butterfly (Puccini); Selection from Martha (Flotow); Baritone Solo: Zazà, piccola zingara, from Zazà (Leoncavallo); Soprano Solo: Regnava nel silenzio, from Lucia di Lammermoor (Donizetti); Selection from A Masked Ball (Verdi). In the interval, Theatre Notes. **9.30,** Concert, relayed from the Gran Caffé del Levante. **9.55,** News.

BASLE.—See **Schweizerischer Landessender.**

BELGRADE

430.4 metres; 2.5 kW.—**3.0 p.m.,** Orchestral Concert: King Peter's March (Brodil); From our Country (Brodil); Potpourri, Gusle (Dominis); Chanson (Friml-Artok); La Tzigane (Ganne); Romantic Suite (Armandola). **4.0,** Talk. **5.55,** Time and Programme Announcements. **6.0,** Popular Music on Gramophone Records. **6.30,** Talk for Sokols. **7.0,** See **Vienna. 9.0,** News, followed by Cigány Music from the Rudnicanin Restaurant.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—**11.55 a.m.,** Nauen Time Signal. **12.35 p.m.,** News Bulletin. **1.0,** Gramophone Concert of Classical and Light Music, relayed from **Berlin (Witzleben). 2.0,** Talk for Girls. **2.30,** Weather and Exchange. **2.45,** Reading (W. J. Hartmann). **3.0,** Educational Talk. **3.30,** See **Leipzig. 4.10,** Talk: The Automobile Exhibition. **4.30,** Talk: From the Far East—Japan's Conception of Mission Work. **5.0,** Recital of Pianoforte Duets: Marches (Schubert): (a) in B Minor, Op. 40, No. 3, (b) in C Minor, Op. 54, (c) in G Minor, Op. 40, No. 2; Bilder aus dem Osten, Op. 66, Nos. 1, 2 and 4 (Schumann); Pianoforte Duets für kleine und grosse Kinder, Op. 85, Nos. 10 and 9 (Schumann). **5.30,** Talk for Workers. **5.55,** Weather and Announcements. **6.0,** Talk: The Church and Unemployment. **6.30,** A Poem. **6.35,** Concert from **Breslau. 7.5,** Concert from **Stuttgart. 8.10,** Recital of Little Known Polonaises by Schumann, with Introductory Talk. **9.0,** Weather, News and Sports Notes. **9.45,** Weather Report for Shipping, followed by Concert from **Berlin (Witzleben). 11.0** (approx.), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—**6.0 p.m.,** Topical Talk. **6.10,** Talk: Röntgen—the History of a Discovery. **6.55,** Extracts from the Second, Third, and Fourth Acts of Carmen—Opera (Bizet) on Gramophone Records. **8.0,** Unter der Dukatenflagge—Radio Picture (Alfred Mühr). **9.15,** Weather, News, and Sports Notes. **9.30** (approx.), Orchestral Concert, relayed from the Central Hotel. **11.0** (approx.), Close Down.

BERNE.—See **Schweizerischer Landessender.**

BEROMUNSTER. — See **Schweizerischer Landessender.**

BODEN.—See **Stockholm.**

BODO.—See **Oslo.**

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—**7.30 p.m.,** News Bulletin. **7.40,** Educational Notes. **7.55,** Lottery Results. **8.0,** Spanish Lesson. **8.15,** News Bulletin. **8.30,** Concert of Light Music.

BRATISLAVA

279 metres; 14 kW.—**5.25 p.m.,** Light Music on Gramophone Records. **5.45,** Slovak Spelling Lesson. **6.0,** See **Prague. 6.5,** See **Brno. 6.20,** A Radio Dialogue. **6.45** till Close Down, See **Prague. 9.15** (approx.), Close Down.

BREMEN.—See **Hamburg.**

BRESLAU

325 metres; 60 kW; and **GLEIWITZ, 253 metres.**—**12.5 p.m.,** Weather for Farmers. **12.7,** Popular Music on Gramophone Records. **12.45,** Time, Weather, News, and Exchange. **1.5,** Popular Music (contd.). **1.45,** Sponsored Programme with Gramophone Records. **2.10,** Agricultural Prices. **2.40,** Reading for Young People. **3.10,** Song and Pianoforte Recital of Light Music. **4.0,** Gramophone Concert: Rheinländer Potpourri (Kermbach); Polka-Mazurka, Frauenherz (Strauss); Potpourri, With Song and Wine (Armandola); Waltz, Les Sirènes (Waldteufel); March, Alt Wien (Dietrich). **4.30,** Agricultural Prices. **4.35,** Talk on Disease. **5.0,** Reading from the Works of Cäsar Flaischlen. **5.30,** Programme to be Announced. **6.0,** Concert by the Station Orchestra, conducted by Franz Marszalek: Potpourri, Major and Minor (Schreiner); Suite from American Forest Idylls (MacDowell); Madrigalett (Bullerian); Russian Romance (Friml); Spanish Serenade (Chaminade); Second Petite Suite (de Micheli); Rhenish Waltz (Gretscher); Dance of the Dervishes from The King's Masked Ball (Bendix). In the interval at **6.30** (approx.), Weather for Farmers. **7.0,** Talk: What are Colds and how can you prevent them? **7.30,** Sepp Summer sings Songs to Bass Guitar Accompaniment: Songs (Summer): (a) Forschen nach Gott, (b) Die Ewigkeit; Weihnachtliches Wiegenlied; Wallensteins Artollei (Summer); Reiterlied (Zahn); Songs (Summer): (a) Der deutsche Tod, (b) Das Vogelorakel, (c) Schön Rohtraut, (d) Die Musik kommt; Zum Tanz (Pöl). **8.0,** News. **8.10,** Concert of Dances and Songs: The Radio Orchestra, conducted by Franz Marszalek and Willy Hezel (Baritone). **9.45,** Time, Weather, News, Sports Notes and Programme Announcements. **10.5,** Orchestral Concert from **Berlin (Witzleben). 11.0** (approx.), Close Down.

BRNO

342 metres; 35 kW.—**3.10 p.m.,** Concert by the Station Orchestra, conducted by B. Bakala. **3.55,** Theatre Review. **4.5,** Concert by the Moravian Quartet: String Quartet in D (Richter); Quartet in F, Op. 3, No. 5 (Haydn); Quartet in A Minor, Op. 29 (Schubert). **5.5,** Talk on Art. **5.15,** Talk for Workers. **5.25,** German Transmission: News, Sports Notes and Talk on the Theatre. **6.0,** See **Prague. 6.5,** Talk on Photography. **6.20,** Serenade, Op. 12, for Two Violins and Viola (Kolály). **6.45,** See **Prague. 8.0,** Reading of Modern Czech Poetry. **8.25** till Close Down, See **Prague. 9.15** (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R.; 509 metres; 15 kW.—**12 Noon,** Concert by the Station Orchestra, conducted by P. Leemans: Overture, Don Pasquale (Donizetti); Suite, Mascarade (Lacôme); Gondoles Vénitiennes (Leemans); Selection from Sappho (Massenet); Czardas for Violin (Monti); Dance of the Hours, from La Gioconda (Ponchielli); Songs (Heymann). **1.0 p.m.,** Le Journal Parlé. **1.10,** Extracts from Madame Butterfly—Opera (Puccini), on Gramophone Records. **2.0.** Broadcast for Schools. **5.0,** Concert by the Radio Orchestra, conducted by Franz André: Hungarian Dances (Brahms); Waltz, Gold and Silver (Lehár); Zapateado (Sarasate); Selection from Tip Toes (Gershwin); Serenade for Flute and Horn (Titl); At the Circus (Armandola); Racketeer Stomp (Deloor-Tower); Free as the Air (De Kers); Spanish Dances (Granados). **6.0,** Talk: Art in the Walloon Country. **6.15,** Recital of Marching Songs by MM. Devillers and Delstanches. F. Boland at the Pianoforte. En toi, j'ai foi (De Ceuninck); Cœurs virils (Spoel); Sous le ciel de la Belgique (Boland); Ca va (Bury); Le Chant du Cavalier (Boland). **6.35,** Concert by the Small Station Orchestra, conducted by P. Leemans: Prelude and Cortège from Déjanire (Saint-Saëns); Nocturne for Flute (Doppler); Symphonic Poem, Provence (Fourdrain); Intermezzo (Brumagne); Potpourri (Ralf). **7.15,** Talk: Rheumatism and its Prevention. **7.30,** Literary Review. **8.0,** Concert by the Radio Orchestra, conducted by Franz André: Overture, Si j'étais roi (Adam); Waltz, Wiener Blut (Joh. Strauss); Poem in Foxtrot Rhythm, Katesk (Packay); Sugar Foot Strut (Pierce); Tempo Tempo (Dostal); Fantastic Suite (Foulds); La Madelon (Borel). **8.45,** Talk for Ex-Servicemen. **9.0,** Concert (contd.). Soloist, Mlle. De Troch (Songs), Love Parade (Arlen); Caprice viennois (Kreisler); Liebesfreud (Kreisler); Aria from Hérodiade (Massenet); Selection from Le Train bleu (Milhaud); Songs: (a) Aria from Cavalleria rusticana (Mascagni), (b) Song (Brahms); Chicago Baby (Shields); Ballet Music from Les deux Pigeons (Messager). **10.0,** Le Journal Parlé. **10.10,** The Fifth Symphony (Tchaikovsky), on Gramophone Records. **11.0** (approx.), Close Down.

BRUSSELS (No. 2)

N.I.R.; 338.2 metres; 15 kW.—Programme in Flemish. **12 Noon,** Act I and Extracts from Act II of La Traviata—Opera (Verdi), on Gramophone Records. **1.0 p.m.,** Le Journal Parlé. **1.10,** Concert by the Small Station Orchestra, conducted by P. Leemans. Soloists: M. Douliez (Pianoforte) and M. Derisen (Popper). Overture, La Vestale (Spontini); Spanish Dances (Laparra); Berceuse and Rêverie (Sgambati); Selection from A Masked Ball (Verdi); Minuet, with Variations for Pianoforte; 'Cello Solo, Spanish Dance, Vito (Popper); Rag Time (Goffin). **2.0,** Educational Programme. **5.0,** Dance Music, relayed from the St. Sauveur Palais de Danse. **6.15,** Talk: Wireless and its Importance in the Teaching of Music and in Schools. **6.30,** Pianoforte Recital: Sonata in G (Haydn); Perpetuum mobile (Weber); Nocturne in F (Chopin); Waltz in D Flat (Chopin); Etude (Liszt); Le rossignol (Liszt). **7.0,** Two Movements from the Quartet in E Flat (Mozart), on Gramophone Records. **7.15,** Literary Programme. **7.30,** Talk on Natural History. **8.0,** Gala Concert by the Station Symphony Orchestra, conducted by M. Meulemans: Melody from Princesse d'Auberge (Blockx); Mijn Moederspraak (Benoit); Old Flemish Songs (De Greef); Popular Melodies: (a) Het Kwezelken, (b) De Koekok; Fantasia on Airs from Tournai (Daneau); Leve me plorer (Défrécheux); Fantasia on a Walloon Air (Ysaye); Walloon Rondo (Jongen); Romance for Violin and Orchestra (Alpaerts); Two Popular Walloon Songs; Fantasia on Two Flemish Songs (De Boeck); Habanera and Waltz (Maes); Canadian Fantasia (Gilson). In the intervals, Recitations. **10.0,** Le Journal Parlé. **10.10,** Gramophone Concert of Flemish and Walloon Songs. **11.0** (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—**4.0 p.m.,** Concert by the Station Orchestra: March (Müller); Overture, Die Fledermaus (Johann Strauss); Waltz, Golden Rain (Waldteufel); Selection from Mignon (Thomas); Selection from The Gipsy Baron (Johann Strauss). **5.0,** News and Time Signal. **5.10,** Talk. **5.25,** Concert by the Station Orchestra. **6.0,** Talk on Romania: Her Cereals—Maize. **6.40,** Popular Music on Gramophone Records. **7.0,** Time Signal. **7.2,** Symphony Concert by the Philharmonic Orchestra, relayed from the Athenæum. **8.0,** Talk. **8.15,** Symphony Concert (contd.). **9.0,** News.

BUDAPEST

550 metres; 18.5 kW.—Programme also relayed on **840 metres** from **7.0 to 11.0 p.m. 4.30 p.m.,** Concert by the Budapest Concert Orchestra, conducted by Wilhelm Komor: Selection from Das Nachtlager in Granada (Kreutzer); Symphonic Poem, Helvetia (Scassola); Selection from Lakmé (Delibes); Miami (Jacobi); Porzellanpüppchen (Lincke); Waltz (Strauss); Overture (Lehár). **5.45,** Review of Foreign Politics. **6.0,** Concert by the Budapest Salon Orchestra: Espagnola (Weninger) Golden Rain (Waldteufel); Souvenir (Drdla); Ballet Suite (Bayer); Lied (Huszka); Lied (Buchner); English Waltz (E. Strauss); Slow Foxtrot (E. Strauss). **7.0,** Programme by Franz Kiss. **7.30,** Concert. In the interval at **8.30,** News. **9.30,** Weather Report. **9.35** (approx.), Cigány Concert from the Café Baross, with Emmerich Varga (Hungarian Folk Songs). In the interval at **10.0,** Talk for Pathfinders. **11.0** (approx.), Close Down.

CASSEL.—See **Frankfurt.**

COPENHAGEN

281 metres, 0.75 kW.; and **KALUNDBORG, 1,153 metres,** 7.5 kW.—**11.45 a.m.,** String Ensemble Concert, conducted by Harald Andersen, relayed from the Bellevue Strandhotel. **1.0 to 2.0,** Interval. **2.0,** Concert of Danish Dance Music by Sid Merriman's Band. In the interval, Reading. **4.0,** Programme for Children. **4.40,** Exchange and Fish Market Prices. **4.50,** Talk. **5.20,** German Lesson. **5.50,** Weather. **6.0,** News. **6.15,** Time Signal. **6.30,** Agricultural Talk. **7.0,** Time Signal from the Town Hall. **7.1,** Concert of Ballet Music from French Opera by the Station Orchestra, conducted by Emil Reesen: Entr'acte and Danse des Bacchantes from Philémon et Baucis (Gounod); Waltz from Faust (Gounod); Minuet from Céphale et Procris (Grétry); Ballet Music from La Juive (Halévy); Two Airs from Izeyl (Pierné); Andalouse and Aragonaise from The Cid (Massenet); Selection from Henry VIII (Saint-Saëns). **7.50,** A Funeral—Humorous Radio Sketch after Mark Twain (Clara Rosenberg). **8.15,** Songs from Sound Films on Gramophone Records: Ein Bischen Liebe für mich (Abraham); Song of the Dawn from The King of Jazz (Yellen and Ager); Two Songs from Hungarian Nights (Brodszky). **8.30,** The Miracle—Sketch (R. Löwit), arranged for Radio by Hans Rösler. **8.45,** News. **9.0,** Concert of Coutemporary Danish Music by the Radio Symphony Orchestra and a Wind Instrument Quintet; conductor, Emil Reesen: Symphony in B Flat, Op. 4 (Senstius); Dialogue for Oboe and Clarinet, Op. 10 (Höffding); Intermezzi espressivi for Flute, Oboe, Clarinet, Bassoon, and Horn (Bentzon). **10.0** (approx.), Close Down.

CORK.—See **Dublin.**

DANZIG.—See **Heilsberg.**

DRESDEN.—See **Leipzig.**

DUBLIN

Call 2RN, 413 metres; 1.2 kW., and **CORK, 224.4 metres.**—**1.30 to 2.0 p.m.,** Time Signal, Weather Report, Stock Report and Light Music on Gramophone Records. **6.0,** Popular Music on Gramophone Records. **6.15,** Programme for Children. **7.0,** Light Music on Gramophone Records. **7.20,** News Bulletin. **7.30,** Time Signal. **7.31,** Gardening Talk. **7.45,** Talk on Ancient Irish Art. **8.0,** Concert of Classical Music by the Station String Orchestra. **8.45,** Tenor Solos by Edward Kenny. **9.0,** Dance Music on Gramophone Records. **9.30,** Light Music by the Station Orchestra. Soloist: Miss K. Fagan. **10.30,** Time Signal, News, Weather Report and Close Down.

FECAMP

223 metres; 10 kW.—**6.0 to 7.0 p.m.,** Programme in English by the I.B.C. **6.0,** Concert for Torquay and Weymouth Listeners: Piccolo Solo: Deep Blue Sea (Bremer); Songs: (a) The Floral Dance (Moss), (b)

Whither? (Schubert), (c) The Lute Player (Allitson), (d) Drake's Drum (Stanford), (e) By the Sea (Schubert), (f) The Old Superb (Stanford); Piccolo solo: Sylvia Scherzo (La Thiere); Violin Solos and Orchestral Music; Narcissus (Nevin); Violin Solos: (a) Kashmiri Love Song (Woodforde-Finden), (b) Because (d'Hardelot), (c) The Morning Dew, (d) The Song of Songs (Moya), (e) Tell her I am, (f) Hindu Song (arr. Kreisler); Kaiser Walzer (Strauss). **10.0** till Close Down. Programme in English by the I.B.C. **10.0,** Dance Music: After the Party; Blue again; Bubbling over with love; I'm yours; Nevertheless; Love for sale; I believe in you; Hello, Beautiful; There's Something in your Eyes; Sing; The Queen was in the Parlour; There's Something about an Old-fashioned Girl; Springtime reminds me of you; My Sunshine came on a Rainy day; I found you; I like a little Girl like that. **11.0,** Song Recital: Brothers of the Empire (Helmore); I am a Friar of Orders grey (Reeve); The Volunteer Organist (Lamb); Rocked in the Cradle of the Deep (Knight); My Sword and I (Byng); Le rève passe (Helmer); I travel the Road (Helmer); Rolling down to Rio. **11.30,** Music by a Symphony Orchestra: Overture, Tancred (Rossini); Two Dances from the Nell Gwynn Suite (German): (a) Country Dance, (b) Merry Makers' Dance; Prelude to Carmen (Liszt); Two Henry VIIIth Dances (German): (a) Torch Dance, (b) Morris Dance; The Hall of the Mountain King from the Peer Gynt Suite (Grieg). **12.0 Midnight,** Pianoforte Duets: Happy go lucky you; Silver Hair and Heart of Gold; Dream Sweetheart; The Turning of the Tide; Same Old Moon; Round the Bend of the Road; Night shall be filled with Music; Auf wieder-sehen, my Dear. **12.30 a.m. (Saturday),** Accordion Solos: Ragtime Medley (arr. Charles); Petit Jean (Cuvelier); Perdita (Cuvelier); Triumph of Eros (Cuvelier); La Tourtercelle (Damare); Tango de Paques (Cuvelier); Restless Fingers (Cuvelier). **1.0,** Vaudeville Programme: The Telegraphy Boy; Song: I laughed so hard I nearly died; Child Impersonation (Bref); Songs: (a) Fe Fi Fo Fum, (b) She's too good for me; Child Impersonation, Daddy's Sweetheart (Lehmann); Song: My Wife is on a Diet. **1.30,** Light Songs: Pretty Kitty Kelly (Johns); Speak to me of love (Sievier); Today, to-morrow for ever; Springtime reminds me of you (Carter); Dream Lover (Schertzinger); O Nicholas, don't be so ridiculous (Hargreaves); My Love Parade (Schertzinger); On a Cold and Frosty Morning (Hargreaves). **2.0,** Dance Music: You, just you; In a Shanty in old Shanty Town; Don't say goodbye; We just couldn't say goodbye; She was only Somebody's daughter; Silver Hair and Heart of Gold; Marching along together; Song of the Bells; Where is this Lady?; Rock your cares away; Tell me to-night; A Bedtime Story; Same old Moon; Bravo, Jim; Goodbye Blues; When the Band goes marching by. **2.57,** I.B.C. Goodnight Melody. **3.0** (approx.), Close Down.

FLENSBURG.—See **Hamburg.**

FLORENCE.—See **Turin.**

FRANKFURT

259 metres; 17 kW and **CASSEL, 245.9 metres.—4.0 p.m.,** Concert by the Station Orchestra: Soloist: Willy Renner (Pianoforte): Part I Conductor: Hans Rosbaud: Ballet Suite (Gluck-Mottl); Pianoforte Concerto in D Minor (Bach); Three Marches (Mozart); Part II, Conductor: Walter Caspar: Descriptive Pieces. **5.15,** Economic Notes. **5.25,** See **Stuttgart.** **5.50,** Time, Programme Announcements, Weather and Economic Notes. **6.0** (approx.), See **Stuttgart.** **6.45,** Radio Report on the Fifth Day of the International Ski-ing Championships in Innsbruck. **7.5,** See **Stuttgart.** **9.0,** Time, News, Weather and Sports Notes. **9.30,** Orchestral Concert from **Berlin (Witzleben).** **11.0** (approx.), Close Down.

FREDRIKSSTAD.—See **Oslo.**

FREIBURG.—See **Stuttgart.**

GENEVA.—See **Radio-Suisse Romande.**

GENOA.—See **Turin.**

GLEIWITZ.—See **Breslau.**

GOTEBORG.—See **Stockholm.**

GRAZ.—See **Vienna.**

HAMAR.—See **Oslo.**

HAMBURG

Call ha (in Morse), 372 metres; 1.5 kW. Relayed by **Bremen, 269.8 metres; Flensburg, 227.4 metres; Hanover, 566 metres,** and **Kiel, 232.2 metres.—6.0 p.m.,** Talk: Economic Independence and World Industry. **6.25,** Weather. **6.30,** Review of Books on the English and French Revolutions. **7.0,** Self-Portraits of Living Composers: Siegmund von Hausegger Concert by the Hamburg Singakademie and Members of the Hamburg Teachers' Choral Society, with an Introductory Talk by the Composer. Conductor: The Composer. Symphonic Variations, Aufklänge; Nature Symphony. **8.40,** Topical Talk. **8.50,** Time, Weather, Announcements, Sports Notes and Police Report. **9.10,** Concert, relayed from the Reichshof. **10.20,** Ice Report. **10.25** (from **Hanover**), Concert relayed from the Continental Café.

HANOVER.—See **Hamburg.**

FEB. 10th **FRIDAY** *continued*

HEILSBERG

276.5 metres; 60 kW and **DANZIG, 453.2 metres.—12.5 p.m.,** Orchestral Concert: Overture, The Hermit's Bell (Maillart); Waltz, Wine, Woman and Song (Joh. Strauss); Salut d'amour (Elgar); Rusticanelli (Cortopassi); Potpourri, Fortissimo (Feigl); Ich liebe dich (Grieg); Erotica (Grieg); Suite, On the Banks of the Nile (Platen). In the interval at **12.20,** News. **1.30,** Sponsored Programme with Gramophone Records. **2.0,** Agricultural Market Prices and Exchange Rates. **2.30,** Reading for Children. **3.0,** Talk for Women: From the Diary of a Woman Aviator. **3.30,** Concert by the Small Station Orchestra, conducted by Eugen Wilcken; Overture, Silvana (Weber); Prelude in C Sharp Minor (Chopin); Valse lente (Chopin); Selection from Hérodiade (Massenet); Suite, La Source (Delibes); Overture, The Thieving Magpie (Rossini). **4.45,** Talk: Books and the Education of Country People. **5.15,** Agricultural Prices. **5.20,** Ice Report. **5.30** (from **Danzig**), Vocal and Instrumental Concert of Popular Music: Friedel Leopold (Songs to the Lute), Hermann Gernert (Zither), and Max Dowileit (Violin). **6.30** (from **Danzig**), French Conversation. **6.55,** Weather Report. **7.0,** Love, Nothing But Love—a One-Act Play, an Operetta and Variety Items (Erik Schwabach, Music by Allan Gray). **8.0,** News. **8.10,** Wagner Concert: The Königsberg Opera House Orchestra, conducted by Bruno Vondenhoff: Soloist: Erich Hallström: Eine Faust Ouverture; Prayer from Rienzi; Second Movement from the Symphony in C; The Rome Narrative, from Tannhäuser; Overture and Bacchanale from Tannhäuser. **9.10,** Weather, News and Sports Notes.

HILVERSUM

(Announced **HUIZEN**), **296.1 metres;** 20 kW. (7 kW. up to **4.40 p.m.**).—Programme of the Catholic Radio Society (K.R.O.). **11.55 a.m.,** Orchestral Concert, conducted by Johan Gerritsen; March from The Prophet (Meyerbeer); Selection from Aïda (Verdi); Dream Children (Elgar); Concerto for Double Bass (Kussewitski); Spanish Dance (Falla); Gramophone Records: Overture, The Merry Wives of Windsor (Nicolai); East Asiatic Suite (Yoshitomo); Waltz from Eugene Onegin (Tchaikovsky); Träumerei (Schumann); Durch Webers Zauberwald (Urbach). **1.55 to 2.10 p.m.,** Interval. **2.10,** Organ Recital: Andante cantabile from the First Symphony (Beethoven); Bénédiction nuptiale (Dubois); Offertoire No. 6 (Lefébure-Wely); Nocturne (Chopin); Prelude and Fugue in A Minor (Bach); Minuet and Cantabile (Tchaikovsky); Wiegenlied (Brahms); First Part of the Concerto for Flute (Princk). **3.10,** Vocal and Instrumental Concert: Prelude and Fugue in A Minor for Pianoforte (Bach); Sonata in E Minor for Violin and Pianoforte (Bach); Pianoforte Solos: (a) Polonaise in C Minor (Chopin), (b) Nocturne in B, Op. 32 (Chopin), (c) Waltz in C Sharp Minor (Chopin), (d) Waltz in E Minor (Chopin); Songs: (a) Ave Maria (Cherubini), (b) Sanctus (Gounod), (c) Come raggio di sol (Caldara), (d) Ah mio cor (Handel), (e) Vittoria (Carissimi); Sonata for Violin and Pianoforte (Franck); Pianoforte Solos: (a) Prelude (Reger), (b) Cradle Song (Gretchaninov), (c) Seven Short Pieces (Luig); Songs: (a) Der Atlas (Schubert), (b) Der Doppelgänger (Schubert), (c) Wanderers Nachtlied (Schubert), (d) Feldeinsamkeit (Brahms); Danse nègre (Scott). **4.40,** Agricultural Talk. **5.10,** Concert of Light Music by the K.R.O. Boys. **5.55,** Lesson in Public Speaking. **6.25,** Concert of Light Music (contd.). **6.50,** Talk. **7.10,** Police Notes. **7.25,** Programme to be announced. **8.0** (approx.), Concert from **Brussels No. 2.** **9.20** (in an interval), News Bulletin. **10.20,** Variety Music on Gramophone Records.

HORBY.—See **Stockholm.**

HUIZEN

Announced **HILVERSUM, 1,875 metres;** 8.5 kW.—**11.40 a.m. to 3.40 p.m.,** Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.). **11.40,** Time Signal. **11.41,** Concert by the Wireless Orchestra, conducted by Nico Treep. **1.40 p.m.,** Variety Music on Gramophone Records. **2.10,** Concert by the Wireless Chamber Orchestra, conducted by Nico Gerharz, with Gramophone Interludes. **3.40 to 7.40,** Programme of the Workers' Radio Society (V.A.R.A.). **3.40,** Concert by the Little V.A.R.A. Orchestra, conducted by P. Duchant. **4.30,** Programme for Children. **5.10,** Concert (contd.). **5.50,** Variety Music on Gramophone Records. **5.55,** Organ Recital by Johan Jong: Selection from Masaniello (Auber); Dance of the Flowers (Mascheroni); Selection from Peer Gynt (Grieg); Seidenspitzen (Platzmann); Zwei Märchenaugen (Kálmán). **6.40,** Talk on Russia. **7.0,** Concert by the Flierefluiters, conducted by Hugo de Groot. Soloist: Esther Philipse (Songs); Elle est toute une (Penso); Love is the sweetest thing (Noble); Alles versteh'n heisst alles verzeih'n (Heymann); Vor einer alten Spieluhr (Müller-Melborn); A Little Street where old Friends meet (Kahn-Woods); Love me tonight (Young); Moonlight in Abazia (Valerio); Tiger Rag (Rocca-Komst); Masquerade (Loch); How deep is the Ocean (Berlin); Night shall be filled with Music (Marks); Chinatown (Gerrenos); Marching along together (Steininger). **7.40 to 10.40,** Programme of the Liberal Protestant Radio Society (V.P.R.O.). **7.40,** Talk. **8.10,** Pianoforte Recital by Mme. H. Bosmans: Kinderscenen (Schumann); Ballad Op. 24 (Grieg); Aus meinem Tagebuch Op. 82, Nos. 2 and 10 (Reger); Träume (Strauss); Two Spanish Dances Op. 13 (V. Brücken Fock); Sonatina No. 2 (Pijper); Sonatina (Béla-Bartok). In the interval at **8.40,** Religious Address. **9.40,** Religious Report. **9.45,** News. **9.55,** Religious Address. **10.25,** Gramophone Records. **10.40,** V.A.R.A. Programme: Variety Music on Gramophone Records. **11.40** (approx.), Close Down.

INNSBRUCK.—See **Vienna.**

KALUNDBORG.—See **Copenhagen.**

KIEL.—See **Hamburg.**

KLAGENFURT.—See **Vienna.**

KOSICE.—See **Prague.**

LAHTI

1,796 metres; 40 kW.; and **HELSINKI, 368.1 metres.—6.5 p.m.** (from **Helsinki**): Symphony Concert by the Municipal Orchestra, conducted by Prof. Georg Schnecvoigt, relayed from the University. Soloist: Martti Paavola (Pianoforte): Symphony (Nielsen); Pianoforte Concerto in G (Beethoven); Suite (Klami). **7.45,** News in Finnish. **8.0,** News in Swedish.

LANGENBERG

473 metres; 60 kW.—**12 Noon,** Concert conducted by Wolf: Hensel-Marsch (Wöhlert); Delirien-Walzer (Strauss); Overture Martha (Flotow); Selection from The Pearl Fishers (Bizet); Two Songs (Rich. Strauss): (a) Traum durch die Dämmerung, (b) Ich trage meine Minne; Scandinavian Suite (Frederiksen); Valse triste (Sibelius); Witches' Dance (MacDowell); Minuet (Marx); Gondoliera (Ries); Selection from Prince Methuselah (Joh. Strauss). **1.0 p.m.** (in an interval), News Bulletin. **1.30,** Sponsored Programme with Gramophone Records. **2.30,** Exchange and Time Signal. **2.50,** Programme for Children. **3.20,** Programme for Young People—Radio Play after a Tale of the South Seas (by Robert Louis Stevenson. **4.0,** Concert, conducted by Eysoldt: Ballet Music (Lassen); Intermezzo, Bilder aus dem Osten (Schumann); Scherzo (Schubert); Hungarian Rhapsody (Popper); Cradle Song (Järnefeldt); Amorettenständchen (Kockert); Ballet des Parfums (Popy); Lotosblumen-Walzer (Ohlsen). **5.10,** Reading (Otto Stössel). **5.30,** English Conversation. **5.50,** Weather, Time, Exchange and Sports Notes. **6.0,** Talk: The Animal World. **6.20,** A Discussion on Sickness Benefit. **7.0 to 9.10,** Oriental Programme. **7.0,** Music in the Tea House, by the Station Orchestra, conducted by Eysoldt. **7.15,** Rice—an Instructive Sketch (E. M. Eber). **8.15,** Music in the Tea House (contd.). **8.30,** In the Porcelain Pavilion—Chinese Reveries. **9.10,** News and Sports Notes. **9.30,** Serenade conducted by Wolf. **10.30,** Gramophone Dance Music. **11.0** (approx.), Close Down.

LAUSANNE.—See **Radio-Suisse Romande.**

LEIPZIG

389.6 metres; 120 kW.; and **DRESDEN, 319 metres.—11.5 a.m.,** Orchestral Concert. In the interval at **12.0 Noon,** News, Weather, Snow Report and Time. After the Concert, Exchange Quotations. **1.0 p.m.,** Art Report. **1.15,** Three Pathfinders travel as Sailors—Literary and Musical Sequence (Karl Köster). **2.15,** Talk for the Country Woman. **2.35,** Economic Notes. **3.0,** The Gardening Calendar for February. **3.15 to 3.30,** Interval. **3.30,** Concert by the Leipzig Symphony Orchestra, conducted by Theodor Blumer: Overture, Les Francs-Juges (Berlioz); Piedmontese Dance in G (Sinigaglia); Selection from Fünf Tonbilder (Reinecke): (a) Romanze und Lento, (b) Idylle, (c) Dämmerung und Tanz unter der Dorflinde; Waltz, Edelweiss (T. Blumer, Sen.); Fächer-Polonaise, Op. 225 (Ziehrer). **4.30,** Review of Books on Wagner. **4.50,** Economic Notes, Weather and Time. **5.0,** Talk on Insurance. **5.25,** English Lesson. **5.50,** Programme to be announced. **6.0,** Talk: Strange Peoples on an Unknown Island in the Pacific Ocean. **6.30,** Choral Concert: Unterländlers Heimweh (Scherchen): Der Träumende See, Op. 32 (Schumann); Abschied (Scherchen); Du fernes Land (Sirus); Russisches Bauernlied (Gerster); Lebe wohl (Guttman); Die Schmiede (Scherchen). **7.0,** Concert by the Dresden Philharmonic Orchestra. Soloists: Eugenie Burkhardt (Soprano), Elsa Wieber (Soprano), Max Hirzel (Tenor), and Paul Schöffler (Baritone): Melodies (Weber): (a) Overture, Der Freischütz, (b) Tenor Solo: Durch die Wälder, durch die Auen, from Der Freischütz, (c) Soprano Solo: Glöcklein im Tale, from Euryanthe; Overture, Don Giovanni (Mozart); Baritone Solo from Don Giovanni (Mozart); Aria from Fidelio (Beethoven); Quartet from the First Act of Fidelio (Beethoven); Overture, Nero (Reissiger); Selection from Die Folkunger (Kretzschmer); (a) Eriksgang, (b) Coronation March; Melodies (Wagner): (a) Prelude and Death of Isolde, from Tristan and Isolde, (b) Tenor Solo from Rienzi, (c) Overture, Tannhäuser. **9.5,** News and Gramophone Report on the Fifth Day of the International Ski-ing Championship at Innsbruck. **10.15** (approx.), Concert by the Emdé Orchestra: Overture, Venus auf Erden (Lincke); Waltz, Groszstadtkinder (Dominik); Wachtparade der Hutzelmännchen (Ecklebe); Hungarian Song and Czardas, Dort, wo die Wälden grün (Brodsky); Potpourri, Wolgaklänge (Lindemann); Waltz-Intermezzo, Dream of Love after the Ball (Czibulka); March, Ferrest los! (Holzmann). **10.30** (approx.), Close Down.

LINZ.—See **Vienna.**

LJUBLJANA

574.7 metres; 2.5 kW.—**5.30 p.m.,** Geographical Talk. **6.0,** French Lesson. **6.30,** Programme for Women. **7.0,** See **Vienna.** **8.0,** Time, News, and Light Music on Gramophone Records.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—**7.30 p.m.,** Radio Gazette for Lyons and the South-East. **8.5,** La Traviata—Opera (Verdi), relayed from the Opéra, **Paris.**

MADRID

ARANJUEZ (EAQ), 30.43 metres; 20 kW.—**10.30 p.m.,** Variety Music. **10.45,** Radio Chronicle. **11.0,** Concert of Popular Music. **11.35,** Answers to Correspondence. **11.40,** Spanish-American Talk. **11.45,** Light Music. **12 Midnight** (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 424.3 metres; 2 kW.—**7.0 p.m.,** Chimes, Exchange Quotations, and Programme of Musical Novelties. **7.15,** Medical Talk, Programme of Musical Novelties (contd.), and Variety Items by Ramon Gomez de la Serna. **8.15,** News Bulletin. **8.30 to 9.30,** Interval. **9.30,** Chimes and Time Signal. **9.35** (approx.), Confessions before the Microphone by M. Sánchez de Palacos, with an Interlude by Rosita Cadenas, Arturo Lledo, and M. Guerrero After the Programme, Variety Concert of Songs. **11.45,** News Bulletin and Programme Announcements for Listeners Abroad. **12 Midnight,** Chimes and Close Down.

MALMO.—See **Stockholm**

MILAN.—See **Turin.**

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—**5.15 p.m.,** See **Prague.** **6.5,** See **Brno.** **6.20** till Close Down, See **Prague.** **9.15** (approx.), Close Down.

MOSCOW

TRADES UNION; 1,304 metres; 100 kW.—**4.0 p.m.,** News. **4.10,** Announcements. **4.20,** Concert. **5.20,** Concert of Light Music or a Relay. **8.0,** Review of the Week and Answers to Correspondents in English. **8.55,** Time. **9.5,** Press Review.

MOTALA.—See **Stockholm.**

MUHLACKER.—See **Stuttgart.**

MUNICH

533 metres; 60 kW. Relayed by **Augsburg** and **Kaiserslautern, 560 metres;** and **Nürnberg, 239 metres.—4.0 p.m.,** See **Frankfurt.** **5.15,** Talk: The New Picture Telegrams. **5.45** (from **Nürnberg**), Talk on Housing. **5.55,** Time, Weather, Agricultural Report, and Snow Report. **6.5,** Talk: Wagner and Posterity. **6.25,** Variety Programme: An Easy Musical Guessing Competition for Attentive Listeners; Sizilianische Lichesrache — A Sinister Episode (Frank Braun); Overture, Le Brasseur de Preston (Adam); Scenes from The Tales of Hoffmann (Offenbach); Reverie (Scassola); Grand Potpourri from Der Teufelsreiter (Kalman). **8.0,** Dialogue: Handwriting as a Plastic Exercise. **8.25,** Concert of Modern Chamber Music: The Anton Huber Quartet and Soloists: Serenade for Violin, Viola, Double Bass, Two Clarinets, and Harp (Prestele); Das alte Lied—for Soprano Flute, two Violins, Viola, Cello, and Harp (Freytag); Sonata in G Minor for Flute, Viola, and Harp (Debussy); Psyche—for Mezzo-Soprano, Flute, Harp, Violin Viola, and Cello (Falla). **9.20,** Time, Weather, News, Sports Notes, Snow Report, and Traffic Notes.

NAPLES.—See **Roma.**

NOTODDEN.—See **Oslo.**

OSLO

1,083 metres; 60 kW. Relayed by **Fredrikstad, 365.8 metres; Hamar, 574.7 metres; Notodden, 447.1 metres; Porsgrund, 453.1 metres;** and **Rjukan, 447.1 metres.—4.0 p.m.,** Vocal and Instrumental Concert. **5.0,** French Lesson. **5.30,** Talk: Modern Prisons. **6.0,** Announcements, Weather, and News. **6.30,** English Lesson. **7.0,** Time Signal. **7.1,** Symphony Concert by the Philharmonic Orchestra, conducted by M. Odd Grüner Hegge relayed from the Logen Hall: Soloists: Robert Riefling (Pianoforte) and Rolf Schüttauf (Flute): Overture, Egmont (Beethoven); Suite in B Minor for Strings and Flute (Bach); Concerto No. 1 in D Minor for Pianoforte and Orchestra (Brahms). **8.30,** Foreign Agricultural Market Report. **8.40,**

Weather and News. 9.0, Topical Talk. 9.15, M. Ornulf Ree reads from his own Works. 9.45 (approx.), Close Down.

OSTERSUND.—See **Stockholm.**

PALERMO

542 metres; 3 kW.—**7.0 p.m.,** Announcements, Tourist Talk, Agricultural Notes, Report of the Royal Geographical Society and Giornale Radio. 7.20, Popular Music on Gramophone Records. In an interval at 7.30, Time Signal and Announcements. 7.45, Concert of Old and New Dance Music, with Commentary by Giacomo Del Valle. In the interval, Talk. 9.0, Operetta Music on Gramophone Records. 9.55, News Bulletin.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW.—Time Signal (on **2,650 metres**) at **9.26 a.m.** and **10.26 p.m.** (Preliminary and 6-dot Signals). **5.45 p.m.,** Le Journal Parlé. **7.20,** Weather Report. **7.30,** Music of the Cities—Concert conducted by Edouard Flament: Naples au soir (Marie); A Fête in Cordova (Turina); En vue d'Alger (Saint-Saëns); Jour de fête à Strasbourg (Brun); Scherzo from Roma (Bizet); Sevilla (Albeniz); Bruges and Antwerp (Brusselmans); A Fête in Aranjuez (Demerssemann); Souvenir de Biarritz (Waldteufel); Une journée à Versailles (Delmas); Selection from La Vie Parisienne (Offenbach). **8.15,** La Traviata—Opera in Four Acts (Verdi), relayed from the Opéra.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—**7.0 to 9.0 a.m.,** Probable Relay of the Test Match from Australia. **6.45 p.m.,** Le Journal Parlé. **7.0,** Popular Music on Gramophone Records. **7.45,** Topical Talk. **8.0,** Talk on Music. **8.15,** Interval. **8.30,** Concert of Music by Women Composers by the Station Symphony Orchestra. **10.30,** News.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—**6.45 a.m.,** Physical Culture. **7.30,** Weather and Physical Culture (contd.). **7.45,** Probable Relay of the Test Match from Australia. **8.0,** Press Review and Weather. **8.30,** Test Match Relay (contd.). **12 Noon,** Jewish Address. **12.30 p.m.,** Concert by the Krettly Orchestra: Musette and Tambourin (Rameau); Concerto in D Minor (Bach); Overture, Ruy Blas (Mendelssohn); Andante from the Unfinished Symphony (Schubert); Entr'acte from Manfred (Schumann); Preludes Nos. 15 and 13 (Chopin); Kol Nidrei (Bruch); Divertissement (Lalo); Pieces for Flute and Pianoforte (Revel); Berceuse (Grovlez); Sous les tilleuls (Massenet); Two Arabesques (Debussy). In the intervals at **1.0,** Exchange, News and Weather, and at **1.30,** Exchange. **2.0,** Exchange and Announcements. **3.45,** Exchange and Market Prices. **4.30,** Elementary English Lesson. **6.10,** Agricultural Talk. **6.30,** Concert by the Krettly Orchestra: La Parisienne (de Montalent); Chasse joyeuse (Dyck); L'éternelle confidence (Paulin-Colin); Ravissement (Leduc). **6.50,** Talk on Social Insurance. **7.0,** Talk: The Programme of the Forthcoming World Economic Conference. **7.20,** Concert by the Krettly Orchestra: Parade de Saltimbanques (Pierné); Le Gai Postillon (Flament); By the Camp Fire (Siede); Slav Song (Monfred); Buda-Pest (Leoni). **7.45,** Commercial Prices and News. **8.0,** Literary Readings: China in the Works of Charles Petit. **8.30,** News and Weather. **8.40,** Gastronomic Review. **8.45,** L'étrange aventure de Martin-Pequet—Play (Chaine). In the interval at **9.15,** Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW. Relayed by **W8XK** on **48.86 metres** and **25.27 metres.**—**9.0 p.m.,** Work-a-day Thoughts. **9.5,** Business News. **9.15,** S.A.I. Musicale (Carnegie Tech Chapter). **9.30,** Weather Report. **9.32,** Market Reports. **9.45,** Pianoforte Interlude. **9.50,** David Lawrence Dispatch. **9.55,** KDKA Artist Bulletin. **9.58,** Programme Announcements. **10.0,** Muskingum College Music Clubs. **10.15,** Programme to be announced. **10.30 to 11.15, New York** Relay. **10.30,** The Singing Lady. **10.45,** Little Orphan Annie. **11.0,** Maude and Cousin Bill. **11.15,** Time Signal. **11.16,** Weather Report. **11.17,** Teaberry Sport Review. **11.22,** Press News Reeler. **11.27,** Strange Facts. **11.29,** Temperature Report. **11.30,** KDKA Dinner Concert. **11.45 to 3.15 a.m. (Saturday), New York** Relay. **11.45,** Today's News by Lowell Thomas. **12 Midnight,** Pepsodent Amos 'n' Andy. **12.15 a.m.,** Hilda Burke (Soprano). **12.30,** Five Star Theatre—Charlie Chan. **1.0,** Nestle's Programme. **1.30,** Time Signal and Adventures in Health. **1.45,** Howard Thurston, the Magician. **2.0,** The First Nighter. **2.30,** Armour Programme. **3.0,** Alice Joy. **3.15,** Westinghouse Pioneers. **3.30,** Bridge School of the Air by E. Hall Downes. **3.45,** Bradley Kincaid. **4.0,** Time Signal. **4.1,** Teaberry Sport Review. **4.11,** Temperture Report. **4.12,** Weather Report. **4.13,** KDKA Artist Bulletin. **4.15,** Press Last Minute News Flashes. **4.20,** Cora Williams Hines (Contralto). **4.30,** Henry Halstead and his Californians. **5.0,** Cotton Club Orchestra, from **New York.** **5.30,** Time Signal and Goodnight.

PORSGRUND.—See **Oslo.**

FEB. 10th **FRIDAY** *continued*

PRAGUE

488.6 metres; 120 kW.—**3.10 p.m.,** See **Brno. 3.55,** Talk: Technocracy. **4.5,** See **Brno. 5.5,** Market Prices. **5.15,** Talk for Workers. **5.25,** News in German. **5.30,** German Transmission: Talk on Economics, and Topical Talk. **6.0,** News. **6.5,** See **Brno. 6.20,** Saxophone Solos. **6.45,** Concert of Operetta Music; The Station Orchestra, conducted by Jan Plichta; Soloists: M. Piskackova (Soprano) and J. Pospisil (Tenor): Overture, Die Fledermaus (Joh. Strauss); Two Duets from Der Bettelstudent (Millöcker); Four Songs from A Waltz Dream (O. Straus); Waltz from Die Keusche Barbara (Nedbal); Song and Duet from Eva (Lehar); Overture, Der Opernball (Heuberger); **8.0,** Time Signal. **8.1,** Concert by a Vocal Quartet. **8.25,** Introductory Talk to the following Transmission. **8.35,** The Evolutions of the Pianoforte; Sonata (IV), a Recital: Sonata in B Flat (Benedetto Marcello); Sonata in F (Christian Wagenseil); Sonata in F (dos. Paganelli); Sonata in F (Martini). **9.0,** Time. News, Press Review, and Sports Notes. **9.15** (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; **LAUSANNE, 680 metres;** and **GENEVA, 760 metres.**—**5.0 p.m.** (from **Geneva**), Programme for Young People. **5.30** (from **Lausanne**), Talk for Instructors. **6.0** (from **Geneva**), Weather, News, and Report on the Work of the League of Nations. **6.30** (from **Lausanne**), Lesson for Typographers. **7.0** (from **Lausanne**), La Traviata—Opera in Four Acts (Verdi), in Italian, on Gramophone Records. **9.0,** News and Weather. **9.15** (approx.), Close Down.

RJUKAN.—See **Oslo.**

ROME

Call 1RO, 441 metres; 50 kW. Relayed by **Naples, 319 metres;** and **2RO, 25.4 metres.**—**7.0 a.m.,** Gymnastics. **7.15 to 7.30,** Giornale Radio and Announcements. **11.30,** Weather and Light Music on Gramophone Records. **12 Noon,** Time and Announcements. **12.2 to 1.15 p.m.,** Orcestral Concert. In the interval from **12.30 to 12.45,** Giornale Radio and Exchange. **3.0,** Viola Recital by Lionel Tertis, relayed from the Royal Academy of Saint Cecilia. **6.0,** Giornale Radio. **6.10 (Naples),** Shipping and Sports Notes. **6.15,** Agricultural Report, Announcements and Light Music on Gramophone Records. **7.0,** Time and Announcements. **7.5,** Report of the International Institute of Agriculture (in Italian, English, French, German, and Spanish). **7.30,** Talk on Sport, Sports Notes, and Tourist Report. **7.45,** Variety Concert: Soloists: Maria Perea Labia (Soprano), Emilio Livi (Tenor), Vittorio Sensi (Baritone), Arturo Dalmonte (Bass), and Ofelia Parisini (Soprano); Extracts from Don Pasquale (Donizetti). **8.15** (approx.), Fuggiano—Comedy in One Act (Lucilla Antonelli). **8.45,** Concert contd.): Wedding March from Lohengrin (Wagner); Autumn from The Seasons (Glazunov); The Third Act of La Bohème (Leoncavallo); Dance Music. **9.55,** News Bulletin.

SALZBURG.—See **Vienna.**

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 379.5 metres; 50 kW. Relayed at intervals by **W2XAF** on **31.48 metres,** and by **W2XAD** on **19.56 metres.**—**7.30 p.m. to 12.15 a.m. (Saturday), New York** Relay. **7.30,** Three Shades of Blue. **7.45,** Muted Strings. **8.0,** Echoes of Erin. **8.15,** Famous Loves. **12 Midnight,** Jane Froman. **12.15 a.m.,** Stock Reports. **12.30 to 1.30, New York** Relay. **12.30,** Three Keys. **12.45,** The Goldbergs. **1.0,** Cities Service Concert. **1.30, WGY** Farm Forum. **2.0,** Musical Programme from **New York.** **2.30,** Pond's Programme, from **New York.**

SCHWEIZERISCHER LANDESSENDER

BEROMUNSTER, 459 metres; 60 kW.; **BASLE, 244.1 metres;** and **BERNE, 245.9 metres.**—**11.28 a.m.,** Time Signal from Neuchâtel Observatory. **11.30,** Weather and News. **11.40,** Concert by the Little Radio Orchestra. **12.35 p.m.,** Weather and Exchange. **12.45 to 2.30,** Interval. **2.30,** Popular Music on Gramophone Records. **3.30** (from **Berne**), Programme for Children. **4.0,** Gramophone Concert of Mozart's Youthful Compositions. **4.30,** Weather Report. **4.35 to 5.30,** Interval. **5.30** (from **Berne**), Talk: The Dangers of Alcoholic Poisoning. **6.0,** Time, Weather, Market Prices, Tourist Report, and Winter Sports Bulletin. **6.20** (from **Berne**), Talk: New Literature about Richard Wagner. **6.45,** Orchestral Concert. **7.0** (from **Berne**), Songs and Dances of Death (Mussorgsky), sung by Felix Löffel (Bass). **7.20,** Orchestral Concert (contd.). **7.30** (from **Berne**), Othmar Schoeck Song Recital by Felix Löffel (Bass). **7.40,** Orchestral Concert (contd.). **7.55** (from **Berne**), Recital of rarely heard 'Cello Music by Lorenz Lehr, Rudolf von Tobel, Charlotte George, and Walter Rytz. Odette Aublet at the Pianoforte. **8.30,** Weather and News. **8.40,** Dance Music.

SOTTENS.—See **Radio-Suisse Romande.**

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by **Boden, 1,229.5 metres; Göteborg, 322 metres; Horby, 257 metres; Motala, 1,348 metres; Ostersund, 770 metres;** and **Sundsvall, 542 metres.**—**4.5 p.m.,** Boy Scouts' Report. **4.25** (from **Sundsvall**), Accordion Music. **5.0,** Orchestral Concert: Dance Suite (Smetana); A la Gavotte (Schütt); Selection from L'Africaine (Meyerbeer); Foxtrot (Brosch); Waltz, Prima ballerina (Waldteufel); Berceuse, Op. 9, No. 3 (Kallstenius); Selection from Les cloches de Corneville (Planquette). **6.0,** The Inquisitive Microphone. **6.15,** Weather and News. **6.30,** Literary Talk. **7.0** (from **Göteborg**), The Queen of Golconda (F. Berwald); The Göteborg Symphony Orchestra, Choir and Soloists. **8.45,** Weather and News. **9.0,** Gramophone Cabaret. **10.0** (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—**11.30 a.m.,** Light Music on Gramophone Records. **12.45 p.m.,** News. **1.0,** Time and Exchange. **1.5,** Popular Music on Gramophone Records. **2.0 to 4.45,** Interval. **4.45,** Literary Talk. **5.0,** Orchestral Concert, conducted by Roskam: Petite Suite (de Micheli); Overture, Stradella (Flotow); Kaiser-Walzer (Joh. Strauss); Selection from Les Dragons de Villars (Maillart); Träume (Wagner); March, Salut à Alsace (Sali). **6.0,** Trio Concert, relayed from **Lille (265.4 metres). 7.0,** Topical Talk in German. **7.15,** Light Music on Gramophone Records. **7.30,** Time and News. **7.45,** Popular Music on Gramophone Records. **7.55,** Lottery Results. **8.0,** Gramophone Records of Variety Music. **8.30,** Chamber Music by the Théophile Soudant Quartet: Quartet Op. 54 No. 1 (Haydn); Quartet Op. 41 No. 1 (Schumann); Quartet (Ravel). **10.30** (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and **FREIBURG, 570 metres.**—**12.30 p.m.,** Concert from **Langenberg. 1.0,** Sponsored Concert. **1.30,** Advanced English Lesson. **3.15,** Programme from **Berlin (Witzleben). 3.45** (from **Freiburg**), Talk: The Baptismal Certificate in America. **4.0,** See **Frankfurt. 4.45,** Time, Weather, and Agricultural Notes. **5.0,** Talk: Violin-makers at Work. **5.25,** Medical Talk. **5.50** (from **Mannheim**), Talk: Suggestions for Sunday Hikes. **6.0,** Report on the Fifth Day of the International Ski-ing Championship, relayed from **Innsbruck. 6.25,** Time and News. **6.30,** February—Songs and Recitations. **7.5,** Concert by the Philharmonic Orchestra, conducted by Emil Kahn; Soloist: Dusolina Giannini (Soprano): Overture, Iphigenia in Aulis (Gluck), with the Finale by Wagner; Aria from Alceste (Gluck); Divertimento in D (Mozart); Fireworks (Stravinsky); Arias (Puccini) from (a) Manon Lescaut, (b) Madame Butterfly; Two Slav Dances (Dvorák); Italian and Spanish Folk Songs (Giannini): (a) In Mezzo al Mar, (b) Estrellita, (c) Cielito Lindo. **9.0,** Time, News, Weather, Snow Report. Programme Announcements, and Sports Notes. **9.20,** Pianoforte Solos by Otto Sonnen: Humoresque, Op. 4 (Otto Sonnen); Fantasia in F Minor (Chopin). **9.45,** Orchestral Concert from **Berlin (Witzleben). 11.0** (approx.), Close Down.

SUNDSVALL.—See **Stockholm.**

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—**6.0 p.m.,** News Bulletin. **6.15,** Extracts from Opera: (a) Romeo and Juliet (Gounod), (b) Carmen (Bizet). **6.30,** Symphony Music: Quartet in E Flat (Schubert). **6.45,** Music by an Argentine Orchestra. **7.0,** Tourist Talk. **7.15,** Racing Results, Market Prices, and News. **7.25,** Local News. **7.30,** Accordion Music. **7.45,** Military Music. **8.0,** Extracts from Opera: (a) The Tales of Hoffmann (Offenbach), (b) The Magic Flute (Mozart), (c) Faust (Gounod). **8.15,** A Viennese Orchestra. **8.45,** Sound Film Music. **9.0,** Orchestral Suite from The Fire Bird (Stravinsky). **9.30,** Operetta Music: Airs from (a) La belle Hélène (Offenbach), (b) Ciboulette (Hahn), and (c) La Mascotte (Audran). **9.45,** Orchestral Music: Selection from Il Natale di Pierrot (Monti); Concentration (Razaf); Valse du Souvenir (Melé). **10.0,** Humorous Sketches. **10.15,** North African News. **10.30,** Concert for Listeners in Morocco: Selection from La Princesse Jaune (Saint-Saëns); Duet from Lakmé (Delibes); Violin Solo: Air on the G String (Bach); Mon petit Caprice (Halet); Accordion Solo: March (Marceau). **11.0,** Balalaika Music and Russian Songs. **11.15,** Instrumental Solos. **11.30,** Programme in English by the I.B.C.: Choral Concert: Sanctuary of the Heart (Ketelbey); Duet: I travel the Road; Song of the Flame (Harbach); Ol' Man River (Kern); Duet: When it's Moonlight in Killarney; Song of the Dawn (Vellen); Duet: Memories for the Fireside; Songs made famous by Vesta Victoria. **12 Midnight,** Weather and Announcements. **12.5 a.m. (Saturday),** Dance Music. **12.15,** Vocal Tangos. **12.30,** Close Down.

TRIESTE

247.7 metres; 10 kW.—**3.0 p.m.,** See **Rome. 5.35 to 6.30,** See **Turin. 6.30,** Orchestral Concert, conducted by M. Vatta, relayed from the Caffè Dante. **7.0** till Close Down. See **Turin.**

TRONDHEIM.—See **Oslo.**

TURIN

273.7 metres; 7 kW. Relayed by **Milan, 331.5 metres; Genoa, 312.8 metres;** and **Florence, 500.8 metres.**—**3.0 p.m.,** See **Rome.** Giornale Radio in the interval. **5.35,** Giornale Radio, Agricultural Report and Dopolavoro Notes. **6.0,** Giornale Radio. **6.10,** Variety Music on Gramophone Records. **6.25,** Report of the Royal Geographical Society. **6.30,** Time, Announcements and Variety Music on Gramophone Records. **7.0,** Giornale Radio, Weather and Variety Music on Gramophone Records. **7.30,** Sports Notes and Popular Music on Gramophone Records. **8.0,** Symphony Concert, conducted by Daniele Amfitheatrof. Soloists: Jean Wiener and Clement Doucet (Pianoforte); Concerto in C Minor for Two Pianofortes and Orchestra (Bach); Sonata in D (Mozart); Franco-American Concerto for Pianoforte and Strings (Wiener); Two Romanian Songs; Three South American Dances; Three North American Dances; Rhapsody in Blue (Gershwin). Talk in the interval. **10.0,** Giornale Radio.

VATICAN CITY

19.84 metres (Morning), and **50.26 metres (Evening);** 10 kW.—**10.0 to 10.15 a.m.,** Religious Information in German. **7.0 to 7.15 p.m.,** Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by **Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 245.9 metres;** and **Salzburg, 218.5 metres.**—**3.35 p.m.,** Concert. Otti Santera (Soprano), Josef Geringer (Violin), Natalie Freundlich and Roderich Bass (Pianofortes). Elizabeth's Prayer, Allmächt'ge Jungfrau from Tannhäuser (Wagner); Aria from The Taming of the Shrew (Goetz); Marietta's Song to the Lute from Die tote Stadt (Korngold); Sonatina in G, Op. 100, for Violin and Pianoforte (Dvorák); Airs (Chopin): (a) Fantasia in F Minor, (b) Polonaise in A Flat; Sonata in G, Op. 13, for Violin and Pianoforte (Grieg). **4.35,** Tourist Report. **4.45,** Talk: The Social Side of Sport. **5.0,** Talk for Rudolf Hans Bartsch's Sixtieth Birthday: The Author and his Landscapes. **5.25,** Talk: The Vatican State. **5.50,** Time, Weather and Programme Announcements. **6.0,** Report on the International Ski-ing Championships at Innsbruck. **6.25,** Talk: The Troubles and Joys of a Metal Worker. **6.55,** Concert of Music by Julius Bittner, by The Vienna Symphony Orchestra. Conductor: Oswald Kabasta. Soloists: Wanda Achsel (Soprano), Emilie Bittner (Contralto) and Alfred Jerger (Baritone). Selection from Der liebe Augustin (Fall): (a) Prelude, (b) Baritone Solo: Augustin's Song, Sehr verehrte Herren und Frau'n, (c) Soprano Solo: Tini's Song, Ein frecher Kucknuck, (d) Contralto Solo: Wer wird denn allweil ans Sterben denken; Prelude and Soprano Solo from Die Kohlhaymerin; Contralto Solo: Prayer, O Mutter in Schmerzen from Das höllisch Gold; Baritone Solo: Song from Act I of Der Bergsee; Soprano and Baritone Duet: Scene from the Second Act of Das Rosengärtlein. **8.10,** Reading: Die ferne kulisse (Heinz Liepmann). **8.40,** News, Weather, Road Report and Announcements. **9.0,** Concert, relayed from the Krantz-Ambassador Hotel. Gustav Macho (Violin), Hans Quiquerez ('Cello) and Dr. Eugen Billig and Fritz Spielmann (Pianoforte).

WARSAW

1,411 metres; 120 kW.—**11.10 a.m.,** Concert by a Naval Band, relayed from **Gdynia:** Hymn to the Baltic (Nowowiejski); Polonaise in A Flat (Chopin); Overture, Polonia (Wagner); Potpourri of Polish Melodies (Sidorowicz); Slav Dance, No. 1 (Dvorák); Mazurka (Namyslovski); March, Virtuti Militari (Dulin). **12.20 p.m.,** Weather Forecast. **12.25 to 2.10,** Interval. **2.10,** Announcements. **2.15,** Economic Notes. **2.25,** Aviation and Anti-Gas Report. **2.30,** Maritime and Colonial Notes. **2.35,** Talk in connection with the Naval Festival. **2.50,** Talk for Soldiers on the Anniversary of Poland's Return to a Seaboard. **3.0,** Concert of Folk Songs and Sea Shanties by a Sailors' Chorus, conducted by A. Dulin, relayed from **Gdynia. 3.25,** Review of Periodicals. **3.40,** Talk: Biological Research. **4.0,** Programme in connection with the Naval Festival. **5.50,** Ski-ing Notes, relayed from **Cracow (312.8 metres). 6.0,** Miscellaneous Items. **6.20,** News. **6.25,** Programme Announcements. **6.30,** Talk on the Naval Festival. **6.45,** Radio Journal. **7.0,** Talk on Music. **7.15,** Symphony Concert by the Warsaw Philharmonic Orchestra, conducted by I. Neumark. Soloists: Mme. Hansen (Violin) and M. Zurawlew (Pianoforte). Symphony in G (Haydn); Violin Concerto (Tchaikovsky); Toccata for Pianoforte and Orchestra (Respighi); Symphonic Suite, Stained-Glass Windows (Respighi). In the interval, Talk on the Naval Festival. **9.40,** Sports Notes. **9.45,** Radio Journal. **9.55,** Weather Forecast for Aviation and Police Notes. **10.0,** Dance Music by a Naval Band, relayed from **Gdynia. 11.0** (approx.), Close Down.

ZURICH.—See **Schweizerischer Landessender.**

SATURDAY

FEBRUARY THE ELEVENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL	A running commentary on the Rugby Football Match, England *v.* Ireland, relayed from Twickenham. Organ music. Welsh interlude. Choral concert. Will C. Pepper's White Coons' Concert Party. Instrumental concert.
LONDON REGIONAL	Mr. S. P. B. Mais: "The Week-end." Light orchestral programme. Brass Quartet programme. Tango orchestral concert. Orchestral concert.
MIDLAND REGIONAL	Symphony concert. The Music of Schumann," pianoforte recital. "Red Riding Hood," pantomime relayed from the Alexandra Theatre, Birmingham, with a commentary on the production.
NORTH REGIONAL	Mr. John Armitage: "Deepdale and its Cave." A Relay from the Argyle Theatre, Birkenhead. Folk Songs of the North: Lancashire. Brass Band concert.
WEST REGIONAL	Orchestral concert, from the National Museum of Wales. Welsh interlude. "Cue for Number." Some pages from Music Hall history, collected by L. E. Williams.
SCOTTISH REGIONAL	"Trawlers," feature programme. Mr. George Blake: "The Week in Scotland."
BELFAST	Mr. R. J. Welch: "The Ards Peninsula." Alexander Riddell: "Ulster Regiments." Orchestral concert from Wellington Hall. "Loaves and Fishes," a comedy by C. K. Ayre.

ABROAD

BERO-MUNSTER	Symphony concert by the Basle Musical Society, conducted by Felix Weingartner.
RADIO PARIS	Opera: "Parsifal," Wagner, relayed from the Municipal Theatre, Amsterdam.

BARCELONA

RADIO-BARCELONA, Call EAJ1, 348.8 metres; 8 kW.—**6.0 p.m.,** Programme for Children, followed by Trio Concert and Transmission of Comic Pictures. **7.0,** Request Gramophone Concert. **7.30,** Exchange Quotations and Catalan Grammar Lesson. **8.0,** Popular Music on Gramophone Records and News. **9.0,** Chimes from the Cathedral, Weather, Exchange Quotations and Market Prices. **9.5,** Concert by the Station Orchestra: Pasodoble, El Darro (Sentis); Serenade (Löhr); Prelude to Act III of The Mastersingers (Wagner); String Quartet La oracion del torero (Turina); Overture, Cosi fan tutte (Mozart). **9.45,** Roura Garriga recites his own Poems. **10.0,** Concert by a Mandoline Orchestra, conducted by Felix de Santos Sebastian: Lied (Schumann); Minuet (Boccherini); Letzter Frühling (Grieg); Selection from Manon (Massenet); Novelette (d'Ambrosio); Valencian Song (Serrano); En el Oasis (Marti); Andalusian Melodies (Lucena). **11.0,** News, followed by Sextet Concert, relayed from the Granja Royal. **12 Midnight** (approx.), Close Down.

BARI

269.8 metres; 20 kW.—**7.0 p.m.,** Agricultural Notes, Tourist Report, and Announcements. **7.20,** Giornale Radio, Sports Notes, and Weather. **7.30,** Time and Announcements. **7.40,** Relay of an Opera from the Teatro Petruzzelli. In the intervals, Talk, Announcements, and News.

BASLE.—See **Schweizerischer Landessender.**

BELGRADE

430.4 metres; 2.5 kW.—**3.0 p.m.,** Orchestral Concert: Overture, Die Fledermaus (Joh. Strauss); Selection from Hoheit tanzt Walzer (Ascher); Selection from Der Orlov (Granichstaedten). **4.0,** Yugoslavian Songs. **5.55,** Time and Programme Announcements. **6.0,** Wireless Talk. **6.30,** Quartet (Schumann), by the Radio String Quartet. **7.10,** A Radio Play. **7.40,** Madame Butterfly—Opera (Puccini), on Gramophone Records. **9.40,** News, followed by Dance Music on Gramophone Records.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—**11.55 a.m.,** Nauen Time Signal. **12.35 p.m.,** News Bulletin. **1.0,** Gramophone Concert of Operetta Music, relayed from **Berlin (Witzleben).** **2.0,** Programme for Children: Making Diaries. **2.30,** Weather and Exchange. **2.45,** Legends by Friedrich Schnack. **3.0,** Talk on Social Service. **3.30,** See **Hamburg.** **4.10,** The Review of the Week. **5.0,** Songs by Reger and Strauss, by Rita Weise (Soprano). **5.30,** Talk: Problems of the Art of Singing. **5.55,** Weather and Announcements. **6.0,** See **Frankfurt.** **7.0,** See **Berlin (Witzleben).** **9.0,** Weather, News, and Sports Notes. **9.45,** Weather Report for Shipping. **10.0,** Gramophone Records of Schubert's Music, followed by Dance Music from **Berlin (Witzleben).** **11.30** (approx.), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—**3.5 p.m.,** Orchestral Concert, conducted by Bruno Seidler-Winkler: Overture, Undine (Lortzing); Ein Sonnentag (Reim); Two Melodies, Op. 53, for Strings (Grieg); Märkische Suite, Op. 92 (Kaun); Overture, L'île de Tulipatan (Offenbach); Selection from The Tales of Hoffmann (Offenbach); Overture, The Gipsy Baron (Joh. Strauss); Waltz Morgenblätter (Joh. Strauss); Persian March (Joh. Strauss). **5.0,** One of Eighty Million. **5.15,** Pianoforte Trio in C Minor, Op. 101 (Brahms). **5.45,** Topical Talk. **5.55,** The Witzleben Station informs its Listeners . . . . **6.0,** A Reply to W. Michel's Address. **6.20,** Suite from Der Rosenkavalier (R. Strauss). **6.40,** An Address by W. Michel: Nobody knows where he is going. **7.0,** Radio Revels—a Variety Programme by Soloists, Leo Bermani's Orchestra, the Dietrich Schrammel Quartet and the Carl Woitschach Wind Instrument Orchestra. **9.0,** Weather, News, and Sports Notes. **9.15** (approx.), Relay of the Bohême Ball from the Studentenhaus. **10.30,** Dance Music from the Kaisersaal of the Zoo. **11.30** (approx.), Close Down.

BERNE.—See **Schweizerischer Landessender.**

BEROMUNSTER. — See **Schweizerischer Landessender.**

BODEN.—See **Stockholm.**

BODO.—See **Oslo.**

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—**7.30 p.m.,** Sports Notes. **7.40,** Talk on Wireless. **7.55,** Lottery Results. **8.0,** English Lesson. **8.15,** News Bulletin. **8.30,** Popular Music on Gramophone Records. **9.0,** Dramatic Programme, followed by Entertainments Guide.

BRATISLAVA

279 metres; 14 kW.—**2.30 p.m.,** Concert of Dance Music by the Station Orchestra, conducted by J. Odcházel. **4.10,** See **Prague.** **4.20,** Light Music on Gramophone Records. **5.15,** Band Concert of Folk Music. **5.45,** Talk for Housewives. **6.0,** See **Prague.** **6.35,** See **Brno.** **7.30,** Variety Concert by the Station Orchestra. Soloists: V. Strelcova (Soprano) and S. Iloza (Tenor). **9.0,** See **Prague.** **9.15** till Close Down, See **Moravská-Ostrava.** **10.30** (approx.), Close Down.

BREMEN.—See **Hamburg.**

BRESLAU

325 metres, 60 kW.: and **GLEIWITZ, 253 metres.—12.5 p.m.,** Weather for Farmers. **12.7,** Popular Music on Gramophone Records. **12.40,** News Bulletin. **12.45,** Sponsored Programme with Gramophone Records. **1.0,** Radio Report on the Bob-sleighing Championship for Pairs, relayed from **Schreiberhau.** **2.0,** Market Prices and Exchange. **2.15,** Report on the International Skiing Championship, from **Innsbruck,** and Orchestral Concert. In the interval, Report on the Ski-jumping from the Isel Berg. **3.30,** Weekly Film Review. **3.50,** Concert from **Berlin (Witzleben).** **4.30,** Book Review. **4.45,** Talk: Household Remedies and Dentistry. **5.10,** Review of the Week's Talk and Literature. **5.40,** Gramophone Concert: Overture, Donna Diana (Rezniczek); Selection from The Geisha (Jones); Waltz, Wine, Womaa and Song (Joh. Strauss); Polka, from Schwanda the Piper (Weinberger); Wiener Fiakerlied (Pick); Jetzt trink'n ma noch a Flascherl Wein (Lorenz); Slow Foxtrot, Sendezeichen (Evert); Waltz, Die Schönbrunner (Lanner); **6.30,** Weather for Farmers and Topical Talk. **7.0,** Film—a Radio Play (Erik-Ernst Schwabach), with Music by Allan Gray. **9.15** Time, Weather, News, Sports Notes and Programme Announcements. **9.35,** Dance Music from **Berlin (Witzleben).** **11.0** (approx.), Close Down.

BRNO

342 metres; 35 kW.—**5.0 p.m.,** Theatre and Film Review. **5.15,** See **Prague.** **5.25,** German Transmission: News and Mandoline Band Concert. **6.0,** See **Prague.** **6.35,** Band Concert, conducted by J. Krenovsky. **7.30,** Cabaret Programme. **9.0,** See **Prague.** **9.15** till Close Down, See **Moravská-Ostrava.** **10.30** (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—**12 Noon,** Concert, conducted by André Felleman, relayed from the Grand Hotel, Antwerp: Suite from L'Arlésienne (Bizet); Suite, Pieter-Both (Douliez); Roulo Capriccioso for Pianoforte and Orchestra (Mendelssohn-Zwysen); Tango, Moja Malenka (Karazinski); Foxtrot, Yvonne (Lewis-Douliez); Viennese Operetta Potpourri (Hruby). **1.0 p.m.,** Le Journal Parlé. **1.10,** Concert by the Little Station Orchestra, conducted by P. Leemans: Siamesische Wachtparade (Lincke); Potpourri, Echoes of Romania (Dauber); Joujou d'amour (Demaret); Spanish Caprice for Pianoforte (Moszkovsky); Waltz, Du, Du, Du (Stolz); Selection from The Pink Lady (Caryll). **5.0,** Dance Music from the St. Sauveur Palaise de Danse. **6.0,** Talk: Careers and Professions—the Stenographist. **6.15,** Song Recital by Rachel Piette: Ballad from The Flying Dutchman (Wagner); L'amante (Marsick); Ma soeur la pluie (d'Agrèves); Retour (Goeyens). **6.30,** Sonata for 'Cello and Pianoforte (Chopin), by Mme. Husson-Michaux and Mme. Berthe Labille. **7.0,** Request Gramophone Records: Prelude in E Flat Minor (Bach); Dance of the Seven Veils from Salomé (R. Strauss); I call upon Thee, Jesus (Bach). **7.15,** Talk: Missions to the Belgian Congo. **7.30,** Review of International Affairs. **8.0,** Dance Music on Two Pianofortes by Sylvain Hamy and René Sinclair. **8.30,** A Confident—One-act Comedy (Deauville). **9.0,** Concert by the Station Orchestra, conducted by P. Leemans: Overture, Gli Orazii e Curziazii (Cimarosa); Suite, Henry VIII (Foulds); Flute Solo: Bulbul (Pujdini); Danse sacrée et danse profane for Pianoforte and String Quartet Debussy); Adagio for Clarinet and String Quintet (Wagner); Nocturne and Tarantella for Violin (Szymanovski); Second Hungarian Rhapsody (Liszt). **10.0,** Le Journal Parlé. **10.10,** Hot Jazz by André Ache. **10.30,** Concert by Paul Moreaux and His Orchestra, relayed from the Menuline Hall, Antwerp. **12 Midnight** (approx.), Close Down.

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW. Programme in Flemish.—**12 Noon,** Concert by the Small Station Orchestra, conducted by P. Leemans; Soloists: M. Derissen ('Cello) and M. Wigy (Violin): Overture, Die schöne Galathée (Suppé); Second Petite suite (de Micheli); Russian Dance, No. 4 (Bullérian); Elegy for 'Cello (Massenet); Selection from Rienzi (Wagner); Serenade for Violin (Drdla); Intermezzo (Macker); Foxtrot, Ein nettes kleines Fräulein (Sachs-Schwarz). **1.0 p.m.,** Le Journal Parlé. **1.10,** Concert, relayed from the Grand Hotel, Antwerp; Conductor: André Felleman: Foxtrot Overture, Russian Rhapsody (Nusslaum); 'Cello Solo: Träumerei (Schumann); Rhythmic Foxtrot (Robrecht); Romance for Violin (Svendsen); Waltz, Reaching for the Moon (Berlin); Songs from The Circus Princess (Kálmán). **5.0,** Concert by the Symphony Orchestra, conducted by Jean Kumps: Italian Symphony (Mendelssohn); Two Pieces (Gilson): (a) Humoresque, (b) Zabava; Eighteenth Century Suite (Goyens); Claironnerie (Ducasse). **6.0,** Reading. **6.15,** Gramophone Concert La Santa Espina (Morera); Serenade (Toselli); Contemplation (Renié); Overture, Nebuchadnezzar (Verdi); La nit de l'amor (Morera); Notturno d'amore (Drigo); La sourve (Zabel); Gipsy Serenade (Borganov); Operetta Potpourri (arr. Misraki); Ballet Music from Faust (Gounod). **7.15,** Talk: The Origin of Signs and Signboards. **7.30,** Agricultural and Gardening Notes. **8.0,** Concert by the Symphony Orchestra, conducted by Jean Kumps; Soloists: Edmond Harvant (Violin) and Henriette Sala (Songs): Symphony (de Maleingreau); Concerto No. 3 for Violin and Orchestra. **8.45,** Talk: How to become a Photographer. **9.0,** Orchestral Concert (contd.): Zohar (Brenta); Songs: (a) Im Frühling (Schubert), (b) Frühlingstraum (Schubert), (c) Zur Rosenzeit (Grieg), (d) Ein Traum (Grieg); In Memoriam (Devreeze); Three Songs Rhapsody on Two Popular Flemish Themes (Absil). **10.0,** Le Journal Parlé. **10.10,** Dance Music from the St. Sauveur Palaise de Danse. **11.30,** Gramophone Concert of Popular Music. **12 Midnight** (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—**4.0 p.m.,** Concert of Light Music and Romanian Music by the Sibiceano Orchestra. **5.0,** News and Time Signal. **5.10,** Talk. **5.25,** Concert by the Sibiceano Orchestra. **6.0,** Talk on Romania: Her Industries. **6.40,** Popular Music on Gramophone Records. **7.0,** Time Signal. **7.1,** Pianoforte Recital by Mme. Cerkez Negoesco: Harlequin's Entry (Rinaldi); In the Monastery (Borodin); Melody (Arlosofsi); Two Sonatas (Scarlatti); Etude (Chopin); Glow-worms (Jean Philip). **7.30,** Talk. **7.45,** Choral Concert of Sacred Music and Popular Romanian Melodies. **8.25,** Dance Music, relayed from the Grand Hotel. **9.0,** News.

BUDAPEST

550 metres; 18.5 kW.—Programme also relayed on **840 metres** from **6.40** till Close Down.—**4.0 p.m.,** Concert by the Karl Rosa Cigány Band. **4.50,** A Visit to the Kisbelsberg Exhibition, followed by Concert conducted by Ernst Dohnanyi. **6.10,** The Letter Box. **6.40,** A ven gazember—Play (Zsolt Harsanyi). **8.50,** News and Weather. **9.0,** Concert by the Sandor Farkas Cigány Band, from the Café Bodo. Soloist: Gyula Szantho (Hungarian Folk Songs). **10.30,** Dance Music from the Café Bodo with Gyula Szantho in his Repertoire. **12 Midnight,** Close Down.

CASSEL.—See **Frankfurt.**

COPENHAGEN

281 metres; 0.75 kW; and **KALUNDBORG, 1,153 metres;** 7.5 kW.—**11.0 a.m.,** Time and Chimes from the Town Hall. **11.5,** String Ensemble Concert, conducted by A. Benedix, relayed from the Wivex Restaurant. **12 to 1.30,** Interval. **1.30,** Gramophone Concert. Amelita Galli-Curci: Catherine's Song from The North Star (Meyerbeer); Joseph Schmidt: Aria from Manon (Massenet); Franz Völker: Selection from Lilac Time (Schubert-Berté); Jacques Thibaud: Spanish Dance (Granados-Thibaud); Sven Sandberg: Hvorfor (Lesso); Marta Eggerth: Das Glück macht eine Frau so schön (May); Stuart Ross and Joe Sargent: Every Husband has a Wife, but the Iceman has his Pick (Pola); The Boswell Sisters: Two-Step, Charlie Carmichael). **2.0,** Programme for Children. **2.30,** Concert by the Radio Orchestra, conducted by Emil Reesen. Soloist: L. Vendelsoe (Songs); March, Berzaghire (di Capua); Doctrinen-Walzer (E. Strauss); Selection from Der Bettelstudent (Millöcker); Scandinavian Folk Music (Hartmann); Prelude, Renaissance (Lange-Müller); Songs: (a) O, Herre, jeg er meget traet (Melartin), (b) Gik du fra mig nu, (c) Silde den Aften, and (a) Hojt op i Ejehlet og dybt ned i Dal (Lange-Müller), (e) Og nu vil jeg synge en Vise engang, and (f) Du raekker mig Aldenderne trygt og frit (Malling), (g) Ich liebe dich (Grieg); Overture, Preciosa (Weber); Lyric Suite (Grieg); Tango (Albéniz); Waltz, Golden Rain (Waldteufel); Overture, La belle Hélène (Offenbach). **4.40,** Exchange and Fish Market Prices. **4.50,** Talk: Houses and Rents in Copenhagen. **5.20,** French Lesson for Beginners. **5.50,** Weather Forecast. **6.0,** News. **6.15,** Time Signal. **6.30,** Talk: Young People of To-day and Education. **7.0,** Chimes from the Town Hall. **7.5,** Sonata in C, Op. 39, for Violin and Pianoforte (J. P. E. Hartmann) by Leo Hansen and Folmer Jensen. **7.30,** Reading, The Black Cat (Edgar Allan Poe). **7.45,** Concert of Folk Song Music by the Radio Orchestra, conducted by Launy Gröndahl. **8.10,** Song Recital by Kai Allen. **8.30,** Adam Concert. The Station Orchestra, conducted by Launy Gröndahl. Overture, The Nuremberg Doll; Selection from Si j'étais Roi; Overture, The Brewer of Preston. **9.0,** Marimba Recital by Richard Strangerup. **9.15,** News. **9.20,** Orchestral Concert, conducted by Launy Gröndahl. Overture, Il Guarany (Gomez); Waltz, Pays age d'automne (Waldteufel); Furiant (Malat); The Grasshoppers' Dance (Bucalossi); March, Le Régiment de Sambre-et-Meuse (Turlet). **10.0,** Dance Music from the Lodberg Restaurant. In the interval at **11.0,** Time and Chimes from the Town Hall. **11.15** (approx.), Close Down.

CORK.—See **Dublin.**

CRACOW

312.8 metres; 1.5 kW.—**3.0 p.m.,** Popular Music on Gramophone Records. **3.40,** Programme from **Warsaw.** In the interval at **4.55,** Programme Announcements and News. **6.0,** Miscellaneous Items and News. **6.15,** Review of Foreign Politics during the Past Week. **6.30,** See **Warsaw.** **10.0,** Concert from the Pavilion Restaurant. In the interval at **10.30** (approx.), News for Members of the

Polish Polar Expedition. **11.0**, Bugle Call from the Tower of St. Mary's Church.

DANZIG.—See **Heilsberg.**

DRESDEN.—See **Leipzig.**

DUBLIN

Call 2RN, 413 metres; 1.2 kW., and **CORK, 224.4 metres.—1.30 to 2.0 p.m.,** Time Signal, Weather Report, Stock Report and Light Music on Gramophone Records. **7.20,** News Bulletin. **7.30,** Time Signal. **7.31,** Talk. **7.45,** Gaelic Talk. **8.0,** 'Cello and Song Recital by Joseph Schofield and Mary Maguire. **8.30,** The Station Orchestra. **9.0,** Baritone Solos by John Lynskey. **9.20,** The Station Orchestra. **9.50,** Soprano Solos by Mme. A. Heffernan. **10.0,** The Station Orchestra. **10.30,** Time Signal, News, Weather Report and Close Down.

FECAMP

223 metres; 10 kW.—**6.0 to 7.0 p.m.,** Programme in English by the I.B.C. Announcer, Mr. C. Danvers Walker. **6.0,** Concert. Orchestra: (a) Love sends a little Gift of Roses, (b) Sleeping Beauty Waltz (Tchaikovsky); Vocal Quartet: (a) O dry those Tears, (b) Silver Threads among the Gold; Orchestra: (a) Fierra Hispana, (b) Chinatown, my Chinatown; Vocal Quartet: (a) Swing low Sweet Chariot, (b) All Gods Chillun got Wings; Orchestra: I'm crazy about my Baby; Selection from (a) The Belle of New York, (b) Véronique, (c) The Bohemian Girl, (d) Floradora. **11.0** till Close Down, Programme in English by the I.B.C. **11.0,** Club Concert. Let's all dance the Polka; The Lady I love; How are you?; Love is the Sweetest Thing. **11.30,** Concert. Orchestra: Selection from The Gondoliers; Song, Phil the Fluter's Ball; Orchestra: Barn Dance, Happy Darkies. Songs: (a) After the Ball, (b) Father O'Flynn; Orchestra: (a) Brooklyn Cakewalk, (b) Lazy Pete. **12 Midnight,** Orchestral Concert. Colonel Bogey (Alford); The Rose Beetle goes a-wooing (Armandola); Wee MacGregor Patrol (Amers); Siciliana Serenata (Schmalstich); The Whistler and his Dog (Pryor); Babes in Toyland (Herbert); The Warbler's Serenade; Reconciliation (Drigo). **12.30 a.m. (Sunday),** Hawaiian Band: Aloma (Bowers); Home (Stecden); Julien (Donata); Save the Last Dance for me (Hirsch); Makin' Wicky Wacky down in Waikiki (Hoffmann); Ay, ay, ay (Freire); Song of the Islands (King); Aloha Oe (Lilinokalani). **1.0,** Song and Pianoforte Recital. Pianoforte Solo: I found you (Noble); Songs: (a) Eleanor (Harley), (b) Never swat a Fly (de Sylva), (c) That Night in Venice (Nicholls); Pianoforte Solo: Let Love take care of you (Van Phillyse); Songs: (a) I'm in the Market for you (McCarthy), (b) Sittin' on a Five Barred Gate (Hargreaves), (c) When I passed the old Church Door (Nicholls). **1.30,** Vaudeville. Sketch. Peter Perkins at the Races; Songs: (a) Yodelling Love Song, (b) If you can't sing, whistle; Sketch: Doon the Clyde; Songs: (a) Lena, (b) They never go to Bed in China. **2.0,** Dance Music. An Evening in Caroline; Now that you're gone; By the Sycamore Tree; Blues in my Heart; Now's the Time to fall in Love; Back again to Happy-go-Lucky Days; Only me knows why; Hot Coffee; Was that the Human Thing to do?; Good-night Vienna; She didn't say Yes; Five Minutes to Twelve; Snap your Fingers; Somebody loves you; Snuggled on your Shoulder; Majah General Thing-a-me-bob. **2.57,** I.B.C. Good-night Melody. **3.0,** Close Down.

FLENSBURG.—See **Hamburg.**

FLORENCE.—See **Turin.**

FRANKFURT

259 metres, 17 kW.: and **CASSEL, 245.9 metres.—4.0 p.m.,** See **Munich.** **5.15,** Economic Notes. **5.25,** Talk: Air Defence as Self Defence. **5.45,** Time, Programme Announcements, Weather and Economic Notes. **6.0,** The Eifel, a Volcanic Plateau in Prussia—a Radio Sequence. **7.0,** See **Berlin (Witzleben).** **9.0,** Time, News, Weather and Sports Notes. **9.20,** See **Stuttgart.** **10.30,** Dance Music, relayed from **London.** **12 midnight** (approx.), Close Down.

FREDRIKSSTAD.—See **Oslo.**

FREIBURG.—See **Stuttgart.**

GENEVA.—See **Radio-Suisse Romande.**

GENOA.—See **Turin.**

GLEIWITZ.—See **Breslau.**

GOTEBORG.—See **Stockholm.**

GRAZ.—See **Vienna.**

HAMAR.—See **Oslo.**

HAMBURG

Call ha (in Morse), **372 metres;** 1.5 kW. Relayed by **Bremen, 269.8 metres; Flensburg, 227.4 metres; Hanover, 566 metres;** and **Kiel, 232.2 metres.—3.30 p.m.,** Concert of Operetta Music by the Philharmonic Orchestra. Conductor: Horst Platen. Overture, Die schöne Galathée (Suppé); Selection from The Gipsy Baron (Joh. Strauss); Kusswalzer (Joh. Strauss); Overture, Der Waldmeister (Joh. Strauss); Selection from The Dollar Princess (Fall); Waltz, Du und Du (Joh. Strauss). **4.30,** Talk: Do Spectators promote Sport? **4.55,** The Week's True Sea Story. **5.5** (from **Kiel**). Clarinet Concert. Ernst August Beetz (Clarinet) and Hans Döring (Pianoforte). Fantastic Pieces for Clarinet and Pianoforte, Op. 43 (Gade); Adagio from the Quintet in B Minor, Op. 115 (Brahms). **5.25,** Talk: The Economic Strength of Australia and how it was achieved. **5.50,** Weather. **6.0,** See **Frankfurt.** **7.0,** See **Berlin (Witzleben).** **9.30,** Time, Weather, Announcements, Sports Notes and Police Report. **9.50,** Topical Talk. **10.0,** Part Relay of the Press Ball in the Uhlenhorst Fährhaus. In the interval at **10.20,** Ice Report.

HANOVER.—See **Hamburg.**

HEILSBERG

276.5 metres, 60 kW.; and **DANZIG, 453.2 metres.—12.5 p.m.,** Popular Music on Gramophone Records. In the interval at **12.20,** News. **1.30,** Sponsored Programme with Gramophone Records. **2.0,** Market Prices and Exchange Rates. **2.30** (from **Danzig**). Handwork for Children. **3.0,** Concert by the Small Station Orchestra, conducted by Eugen Wilcken: Flieger-Marsch (Dostal); Overture to a Ballet (Lincke); Tom der Reimer (Loewe); Mattinata (Leoncavallo); Waltz, Winterstürme (Fucik); Suite, In a Fairy Realm (Ketelbey); Selection from Tiefland (D'Albert); Rosenlieder (Eulenburg); Selection from Der Zigeunerprimas (Kálmán); Teutonen-Marsch (Lüling). In the interval at **4.0** (approx.), Book Review. **4.40,** Reading. **5.0,** Programme Announcements in Esperanto. **5.15,** Agricultural Prices. **5.20,** Ice Report. **5.30,** World Market Prices. **5.45,** Talk on Wilhelm Konrad Röntgen on the Tenth Anniversary of his Death. **5.55,** Weather Report. **6.0,** See **Frankfurt.** **7.0** till Close Down. See **Berlin (Witzleben).** **11.30** (approx.), Close Down.

HILVERSUM

(Announced **HUIZEN**), 296.1 metres; 20 kW. (7 kW. up to **4.40 p.m.**). Programme of the Catholic Radio Society (K.R.O.).— **11.55 a.m.,** Sextet Concert: Puszta-Sagen (Naef); Overture, Fahrend Volk (Leutschner); Eine Sängerfahrt nach Wien (Silving); The Whirlwind (Mattei); Melody (Rubinstein); Gramophone Records; Sevilla (Alfonso); Selection from The Geisha (Jones); Tango (Kaper); Le réveil du papillon (Jakma); Kaveewee March (Maas). **1.25,** Interval. **1.40,** Programme for Young People. **2.10,** Programme for Children. **3.40,** Parsifal—Opera (Wagner), relayed from the Stadsschouwburg, Amsterdam. In the intervals at **5.40,** News in Esperanto, Press Review, and Police Announcements; and at **7.40,** News and Agricultural Talk. **9.55,** Concert by the KRO Boys, with M. J. Mossel (Songs), and the Bosscheveldlers: Herr Hauptmann, Herr Leutnant (Reisfeld); Die Dorfmusik (Frijberg); Susi, entzückende Susi (Weiss); Du bist mein beste Kamerad (Doelle); Melody from White Horse Inn; Weine nicht, Mütterlein; To-day I feel so happy; Bye, Bye, Blues; Flieger grüss mir die Sonne (Gray); Vibraphone Solo: Von Rosen ein Ringelein (Pfeuffer); March Potpourri (Ciere); Die goldene Spieluhr (Krome); Bei der Weissmann nie (Erwin); The Belle of Barcelona (Rayne); Fiesta; My Golden Baby; Der Onkel Bmnba aus Columba; Tap your Feet; Lasst Schlager sprechen; Malaga (Sentis); Ich mocht' heiraten (Krauss); Wenn man sein Herz verliert (Stransky); Das Lied ist aus (Stolz).

HORBY.—See **Stockholm.**

HUIZEN

(Announced **HILVERSUM**), **1,875 metres;** 8.5 kW.—Programme of the Workers' Radio Society (V.A.R.A.). **11.40 a.m.,** Orchestral Concert, conducted by P. Duchant: Morgenrood (de Nobel); Petite suite (Chaminade); Suite, La Feria (Lacôme); Waltz, Accelerationen (Strauss); Interlude on Gramophone Records; Selection from Louise (Charpentier); Chanson triste (Tchaikovsky); Serenade (Padilla); Lament (Bortkievicz); Socialist March (Gramm); Interlude on Gramophone Records; Vindobona (Leopold); Selection from The Mikado (Sullivan). **1.40 to 1.55 p.m.,** Interval. **1.55,** Variety Music on Gramophone Records. **2.30,** Talk. **2.50,** Concert by the Fluitenluiters, conducted by Hugo de Groot; Songs by Leo Fuld. **3.30,** Chamber Music. **4.10,** Talk on Sport. **4.30,** Concert by the Notenkrakers. **5.20,** Literary Talk. **5.40,** Variety Music on Gramophone Records. **6.40,** Concert of Choral, Orchestral and Organ Music, with Addresses. **8.40,** Orchestral Concert, conducted by Hugo de Groot. Soloists: M. Henri Wallig and Liddy Bergmann (Songs). **10.40.** News Bulletin. **10.50,** Announcements. **10.55,** Gramophone Concert of Variety Music. **11.40** (approx.), Close Down.

INNSBRUCK.—See **Vienna.**

KALUNDBORG.—See **Copenhagen.**

KIEL.—See **Hamburg.**

KLAGENFURT.—See **Vienna.**

KOSICE.—See **Prague.**

LAHTI

1,796 metres; 60 kW; and **HELSINKI, 368.1 metres.—3.0 p.m.,** Variety Concert on Gramophone Records. **4.0,** Talk. **4.25,** Song Recital. **4.50,** Press Review in Finnish. **4.59,** Time and Weather. **5.10,** Press Review in Swedish. **5.15** Talk. **5.40,** Orchestral Concert, conducted by Erkki Linko: Overture, Morning, Noon and Night (Suppé); Morgenblätter (Joh. Strauss); 'Cello Solo, Le Cygne (Saint-Saëns); Hungarian Dance No. 1 (Brahms). **6.5,** A Radio Play. **6.35,** Song Recital. **7.0,** Orchestral Concert: Selection from The Black Orchid (d'Albert); Dance Suite (Mraczek); Intermezzo from Stimmungsbilder (R. Strauss); Minuet and Gavotte from Ein Tanzspiel (Schreker); Overture, The Ace of Hearts (Künnecke). **7.45,** News in Finnish. **8.0,** News in Swedish. **8.15,** Dance Music from the Grand Restaurant. **10.0** (approx.), Close Down.

LANGENBERG

473 metres; 60 kW.—**12 Noon,** Concert of Operetta Music, conducted by Wolf: Casanova March (Lincke); Waltz from Das verwunschene Schloss (Millöcker); Overture, The Gipsy Baron (Joh. Strauss); Selection from The Mikado (Sullivan); Three Melodies from The Cousin from Nowhere (Künneke); Selection from Katja the Dancer (Gilbert); Waltz from Die geschiedene Frau (Fall); Selection from Die Faschingsfee (Kálmán). **1.0 p.m.** (in an interval), News Bulletin. **1.35,** Week-end Concert on Gramophone Records. **2.0,** Radio Report on the International Bob-Sleighing Championship for Pairs on the Zackelfall Track (on Gramophone Records). **2.30,** Exchange and Time Signal. **2.50,** Fairy Tales for Children. **3.10,** Talk: The German Language in Eastern Europe. **3.30,** Reading in English. **4.0,** Concert by the Beethoven Chamber Choir, conducted by Dr. K. E. Heinrich, with Franz Ludwig and Dr. Richard Gress (Pianoforte) and the Orchestra conducted by Wolf: Orchestral Prelude to Sein Lied (Stierlin); Choir: (a) Mutter unser (Volkmann), (b) Sei getreu (Gress); Three Pieces for Pianoforte (Gress); Music for Orchestra from Pole Poppenspäler (Stierlin); Two Songs for Choir (Ludwig): (a) Die Prinzessin Ahlden, (b) Scheidelied; Suite for Pianoforte, Op. 8 (Ludwig); Choir: (a) Abendlied, (b) Sturmlied (Heinrich). **5.10,** Talk for Women: The Amazons. **5.30,** Talk: Nature and Chemistry. **5.50,** Weather, Time, Exchange and Sports Notes. **6.0,** Talk on Political Problems: The Borderland of Bessarabia. **6.20,** Topical Talk. **6.30,** Talk on Social Problems. **6.55,** First General News. **7.0,** Variety Concert in Aid of the Winter Relief Fund, relayed from the Stadthalle, Gummersbach. **9.30,** News and Sports Notes. **9.50,** Serenade conducted by Wolf. **10.30,** Gramophone Dance Music. **12 Midnight,** Close Down.

LAUSANNE.—See **Radio-Suisse Romande.**

LEIPZIG

389.6 metres; 120 kW.; and **DRESDEN, 319 metres.—12.15 p.m.,** Popular Music on Gramophone Records, followed by Exchange Quotations. **1.0,** Wireless Notes. **1.25,** Labour Market Report. **1.35,** Programme for Children. **2.15,** Chess Lesson. **2.45,** Economic Notes. **3.0,** Music Notes. **3.15 to 3.30,** Interval. **3.30,** Concert from **Berlin (Witzleben).** **5.0,** Legal Talk. **5.30,** Talk: Rudolf Hans Bartsch, on his Sixtieth Birthday. **5.50,** A Modern Dictionary. **6.0,** Mandoline Concert: Einigkeit-Marsch (Blankenburg); Concert Waltz, Flowers from Trento (Sartori); Mazurka (Brunetti); March (Schuppe). **6.30,** Talk: Air Travel and Problems of the Future. **7.0,** Concert by the Leipzig Symphony Orchestra, conducted by Hilmar Weber. Soloists: Irma Beilke (Soprano), Oskar Lassner (Bass) and Theodor Blumer (Pianoforte); Jubel-Ouvertüre (Weber); Cavatina from Don Pasquale (Donizetti); Overture, Romeo and Juliet (Bellini); O sancta justitia, from Czar and Carpenter (Lortzing); Mephisto Walzer (Liszt); Recitative and Polonaise from Mignon (Thomas); Rhapsody in Blue for Pianoforte and Jazz Orchestra (Gershwin); Galgenlieder (Graener); Symphonic Dance Suite (Künnecke). In an interval, Gramophone Report on the Sixth Day of the International Ski-ing Championship in Innsbruck. **9.5,** News. **9.15** (approx.), Concert from **Langenberg.** **11.0** (approx.), Close Down.

LINZ.—See **Vienna.**

LJUBLJANA

574.7 metres; 2.5 kW.—**5.30 p.m.,** English Lesson. **6.0,** Talk on Sociology. **6.30,** Talk on the History of Philosophy. **7.0,** Light Music. **8.15,** Quintet Concert. **9.0,** Time, News, and Dance Music on Gramophone Records.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—**7.30 p.m.,** Radio Gazette for Lyons and the South-east. **8.30,** Popular Concert of Songs. In the interval, Talk on Paul Delinet. After the Concert, News Bulletin.

MADRID

ARANJUEZ (EAQ), 30.43 metres; 20 kW.—**6.0 to 8.0 p.m.,** Programme for Listeners in Europe, the Canary Islands, Guinea and America. **6.0 p.m.,** Concert of Popular Music. **7.15,** Talk. **7.30,** Dance Music. **8.0 to 10.30,** Interval. **10.30,** Variety Music. **10.45,** Radio Chronicle. **11.0,** Popular Concert. **11.35,** Talk. **11.40,** Light Music. **12 Midnight** (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 424.3 metres; 2 kW.—**7.0 p.m.,** Chimes, Exchange Quotations, and Request Gramophone Concert. **7.30,** Talk on Co-operative Societies, followed by Request Gramophone Concert (contd.). **8.15,** News Bulletin. **8.30 to 9.0,** Interval. **9.0,** Linguaphone English Lesson. **9.30,** Chimes and Time. **9.35** (approx.). A Musical Comedy. **11.45,** News Bulletin. **12 Midnight,** Chimes and Close Down.

MALMO.—See **Stockholm.**

MILAN.—See **Turin.**

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—**5.25 p.m.,** Baloar Song Recital by Stepanka Stepanova. **6.0,** See **Prague.** **6.35,** See **Brno.** **7.30,** See **Bratislava.** **9.0,** See **Prague.** **9.15,** Variety Programme—Songs, Instrumental Solos, Dramatic Items and Music by the Station Orchestra. **10.30** (approx.), Close Down.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—**4.0 p.m.,** News. **4.10,** Announcements. **4.30,** Concert. **5.30,** Concert of Light Music, or a Relay. **8.0,** Talk in French: Lenin's View of the Doctrines of Marx. **8.55,** Time. **9.5,** Press Review.

MOTALA.—See **Stockholm.**

MUHLACKER.—See **Stuttgart.**

MUNICH

533 metres; 60 kW. Relayed by **Augsburg** and **Kaiserslautern, 560 metres,** and **Nürnberg, 239 metres.—4.0 p.m.,** Concert, conducted by Erich Kloss: Overture, The Nuremberg Doll (Adam); Waltz Scene from Intermezzo (R. Strauss); Scenes from The Black Orchid (d'Albert); Delirien-Walzer (Jos. Strauss); Stolz Potpourri (Dostal); Negro Cradle Song (Chutsam); Waltz, Resignation (Schütze); Alsation Peasant Scenes (Merkling). **5.15,** Programme for Young People. **6.0,** Wireless Hints. **6.15,** Recital of Music by Hermann Zanke. The Composer (Flute) and Richard Staab (Pianoforte). Suite, Op. 7; Two Impressions, Op. 6a, Three Humoresques, Op. 8. **6.40,** Talk on Wireless. **7.0,** Alter schützt . . .—Comedy (R. J. Kreutz). **8.30,** Concert by the Station Orchestra, conducted by Karl List: March, Furchtlos und treu (Fucik); Waltz, In lauschiger Nacht (Weber); Selection from Boccaccio (Suppé); Waltz, Amorettentänze (Gungl); Selection from Der liebe Augustin (Fall); Weber-marsch (Lehar); Overture, Orpheus in the Underworld (Offenbach). **9.20,** Time, Weather, News and Sports Notes. **9.45,** Serenade, conducted by Erich Kloss. **11.0** (approx.), Close Down.

NAPLES.—See **Rome.**

NOTODDEN.—See **Oslo.**

OSLO

1,083 metres; 60 kW. Relayed by **Fredrikstad, 355.8 metres; Hamar, 574.7 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres,** and **Rjukan, 447.1 metres.—3.30 p.m.,** Variety Music on Gramophone Records. **4.15,** Programme for Children. **5.15,** National Songs by M. Gunnar Nygaard and Sacred Melodies by M. Henrik Gjellsvik (Hardanger Fiddle). **5.45,** Talk on Economics. **6.0,** Announcements, Weather and News. **6.30,** Talk: Marine Research. **7.0,** Time Signal. **7.1,** Variety Programme, relayed from Christiansand **(235.5 metres);** Talk, Music and a Play. **8.40,** Weather and News. **9.0,** Topical Talk. **9.15,** Concert of Light Music by the Station Orchestra, conducted by Hugo Kramm. **10.0,** Dance Music on Gramophone Records. **11.0** (approx.), Close Down.

OSTERSUND.—See **Stockholm.**

PALERMO

542 metres; 3 kW.—**7.0 p.m.,** Announcements, Tourist Talk, Agricultural Notes and Giornale Radio. **7.20,** Light Music on Gramophone Records. In the interval at **7.25,** Sports Notes, and at **7.30,** Time Signal and Announcements. **7.45,** Frasquita—Operetta in Three Acts (Lehár). In the intervals: Book Review and Miscellaneous Announcements. **9.55,** News Bulletin.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW. Time Signals on **2,650 metres**) at **9.26 a.m.** and **10.26 p.m.** (Preliminary and 6-dot Signals).—**5.45 p.m.,** Le Journal Parlé. **7.20,** Weather Forecast. **7.30,** A Midsummer Night's Dream—Fairy Play (William Shakespeare), with Incidental Music by Mendelssohn. **9.0** (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—**6.45 p.m.,** Le Journal Parlé. **7.0,** Popular Music on Gramophone Records. **7.30,** Humor-

ous Items by Lucien de Gerlor. 8.0, Talk: The Event of the Week. 8.5, Theatre Notes. 8.15, Interval. 8.30, Viola da Gamba Recital by Jean Schricke. 9.10, Dance Music by the Sonora Orchestra, conducted by Fred Hoffmann. 11.0, Dance Music on Gramophone Records. 12 Midnight (approx.), Close Down.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Probable Relay of the Test Match from **Australia.** 8.0, Press Review and Weather. 8.30, Test Match Relay (contd.). 9.0, Concert, conducted by Philippe Gaubert, relayed from the Old Conservatoire. Soloist: M. Francescatti (Violin). Symphony in C (Schubert); Concerto for Violin and Orchestra, (Beethoven); Overture, Le Carnaval romain (Berlioz). 12 Noon, Concert by the Radio Paris Orchestra: Scènes montagnardes (Dyff); English Melodies (Riego-Higgs); Plantation Melodies (Chambers); German Students' Songs (Maufred); Songs of Italy (Löhr); Noel Pastoral (Aubert); Fourth Hungarian Dance (Brahms); Habanera (Chabrier); Danish Song (Cools); The Old Musical Box (de Sévérac); Creole Legend (Chapelier); Barcarolle (Dère); Song of the Volga Boatmen (Doyen); Sérénade Lointaine (Filipucci); Pupazzi (Schmitt); Air de Ballet (Fourdrain); Noce villageoise (Godard). In the intervals at 1.0 p.m., Exchange, News and Weather, and at 1.30, Exchange. 2.0, Exchange. 3.0, Programme for Children. 3.40, Parsifal—Opera (Wagner), relayed from the Municipal Theatre, **Amsterdam.** 5.40, Agricultural Talk. 6.25, Opera Relay (contd.). 7.40, News, Weather and Review by Rieux. 8.0 A Radio Journey to France, Switzerland, Italy, and Austria, conducted by René Dorin. 8.25, Opera Relay (contd.). 9.55, Press Review and News. 10.10, Gramophone Records: Symphonic Poem, Mazeppa (Liszt); Mephistowalzer (Liszt).

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA); 306 metres; 25 kW.—Relayed by **W8XK** on **48.86 metres** and **25.27 metres.**—9.0 p.m., Dance Masters, from **New York.** 9.30, Concert Favourites, from **New York.** 10.0, KDKA Orchestra. 10.30, Weather Report. 10.32, Behind the Law—Tales of the Pennsylvania State Police. 10.40, Little Orphan Annie, from **New York.** 11.0, Little German Band. 11.30, Time Signal. 11.31, Temperature Report. 11.32, Teaberry Sport Review. 11.37, Press News Reeler. 11.42, Strange Facts. 11.44, Weather Report. 11.45, A Recreo by Bill and Alex of the Downtown Y.M.C.A. 12 Midnight, Time Signal and Programme to be announced. 12.15 a.m. (Sunday), Atkinson String Ensemble. 12.30, KDKA Players. 1.0 to 4.0, **New York** Relay. 1.0, American Taxpayers' League. 1.15, The Boston Symphony Orchestra. 3.15, Salon Singers. 3.30, Buccaneers. 3.45, Twenty Fingers of Harmony. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.13, KDKA Artist Bulletin. 4.15, Press Last Minute News. 4.20, Messages to United Presbyterian Missionaries. 5.20, Messages to Dwellers Far North.

PORSGRUND.—See **Oslo.**

PRAGUE

488.6 metres; 120 kW.—3.10 p.m., Dance Music, relayed from **Bratislava.** 4.10, Talk on Economics. 4.20, Czech Lesson for Germans and German Lesson for Czechs. 4.50, Popular Music on Gramophone Records. 5.5, Agricultural Programme. 5.15, Talk for Workers. 5.25, News in German. 5.30, German Transmission: Reading by Max Brod from his New Novel. 6.0, News. 6.5, Talk on the Czech Language. 6.20, Reading. 6.35, See **Brno.** 7.30, See **Bratislava.** In the interval at 8.0, Time Signal. 9.0, Time, News, Press Review and Sports Notes. 9.15, See **Moravská-Ostrava.** 10.30 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW; **LAUSANNE, 680 metres;** and **GENEVA, 760 metres.**—5.0 p.m. (from **Geneva**), Talk: Radiation. 5.30 (from **Lausanne**), Review of New Books. 6.0 (from **Lausanne**), Weather and News. 6.20 (from **Geneva**), Report on Works of the League of Nations. 6.30 (from **Lausanne**), Talk on Films. 7.0 (from **Geneva**), 'Cello Recital by Maurice Eisenburg. 7.30 (from **Geneva**), Talk on the following Transmission. 7.35 (from **Geneva**). Symphony Concert by the Radio Orchestra, conducted by Fernand Closset: Soloist: André de Ribaupierre (Violin); Overture, King Stephen (Beethoven); Concerto in D for Violin and Orchestra (Brahms); Le festin de l'araignée (Roussel); Symphonic Suite, Paris (Ibert). In the interval at 8.15, News and Weather. 9.0 (from **Geneva**), Dance Music by the Broadcasting Serenaders, relayed from the Hotel des Bergues. 10.30 (approx.), Close Down.

FEB. 11th SATURDAY *continued*

RIGA

525 metres; 15 kW.—4.30 p.m., Organ Recital. Prelude in C (Bach); Wedding Procession from Lohengrin (Wagner); Prelude to Parsifal (Wagner); The Pilgrims' Chorus from Tannhäuser (Wagner); Choral. 5.0, French Lesson. 5.28, Weather Report. 5.30, Children of Fortune—Comedy (Janchevski), relayed from the National Theatre. In the intervals, News and Weather. 8.30, Dance Music. 10.0 (approx.), Close Down.

RJUKAN.—See **Oslo.**

ROME

Call 1RO, 441 metres; 5 kW. Relayed by **Naples, 319 metres, and 2RO, 25.4-80 metres.**—7.0 a.m., Gymnastics. 7.15 to 7.30, Giornale Radio and Announcements. 11.30, Weather and Light Music on Gramophone Records. 12 Noon, Time and Announcements. 12.2 to 1.15 p.m., Orchestral Concert: In a Cradle of Dreams (Nicholls); Lonisita (Barzizzi); Strauss Potpourri (Morena); Desire (Manfred); Ultimo Rajah (di Lazzaro); Do-Do (Morel); Manuela (Carducci); Boler del Picador (Bellotti); On Lake Maggiore (Henker); Tabù (Kollo). In the interval from 12.30 to 12.45, Giornale Radio and Exchange. 3.45, Children's Radio Review and Talk for Young People. 4.0, Exchange, Announcements, Report of the Royal Geographical Society, and Giornale Radio. 4.15, Reading. 4.30 to 5.15, Orchestral Concert: Come un raggio di sole (Barzizza); Melody (Gilbert); Selection from André Chénier (Giordano); Pianoforte Solos: (a) Sevilla (Albeniz), (b) Epigrafe (Castelnuovo), (c) Le Rossignol (Liszt); Serenata agli sposi (de Nardis); Niobe (Carducci). 6.0, Giornale Radio. 6.10 (**Naples**), Shipping and Sports Notes. 6.15, Atmospheric Signals, and Agricultural Notes. 7.0, Time, Announcements, and Light Music on Gramophone Records. 7.30, Sports Notes, Tourist Report, and Announcements. 7.45, Relay of an Opera. In the intervals: Talk, Announcements, and News.

SALZBURG.—See **Vienna.**

SCHENECTADY

GENERAL ELECTRIC COMPANY, WGY, 379 metres; 50 kW.—Relayed at intervals by **W2XAF** on **31.48 metres,** and by **W2XAD** on **19.56 metres.**—12.0 **Midnight,** Soloist, from **New York.** 12.15 a.m. (**Sunday**), Municipal Series. 12.30, Hotel New Yorker Orchestra, from **New York.** 12.45, The World To-day, by James G. McDonald, from **New York.** 1.0, Lady Fingers (Pianists). 1.15, Bernard Silberg (Cellist). 1.30 till Close Down, **New York** Relay. The Economic World To-day. 2.0, The Golden Thread. 2.30, Oldsmobile Programme. 3.0, Lucky Strike Hour and Programme Resumé.

SCHWEIZERISCHER LANDESSENDER

BEROMUNSTER, 459 metres; 60 kW.; **BASLE, 244.1 metres;** and **BERNE, 245.9 metres.**—11.28 a.m., Time Signal from Neuchâtel Observatory. 11.30, Weather and News. 11.40, Winter Sports Notes. 11.45, Light Music on Gramophone Records. 12.35 p.m., Weather and Exchange. 12.45 (from **Berne**), Answers to Correspondence. 1.0 (from **Berne**), Radio Report: The Departure for Winter Sports. 1.20, Songs of the Highroad on Gramophone Records. 1.30 (from **Berne**), Review of New Books. 2.0 (from **Berne**), Famous Pianists—Reproductions of Pianoforte Etudes and Sonatinas by Willy Girsberger, followed by Variety Music on Gramophone Records. 2.30 (from **Berne**), Animal Stories. 3.0 (from **Berne**), Accordion Concert. 3.30 (from **Berne**), Medical Talk. 3.40 (from **Berne**), Talk: The Position of the Domestic Servant. 4.0, Weather Forecast. 4.5 to 5.30, Interval. 5.30 (from **Basle**), Programme for Young People. 6.0 (from **Zürich**), Chimes from the Zürich Churches, followed by Weather and Market Prices. 6.15 (from **Basle**), Talk: Holidays in Morocco. 6.45 (from **Basle**), Introductory Talk to the following Transmission. 7.0 (from **Basle**), Symphony Concert by the Basle Music Society, conducted by Dr. Felix Weingartner. Soloist: Erika Frauscher (Soprano). 9.0, Weather and News. 9.10, Gramophone Dance Music. 10.0 (approx.), Close Down.

SOTTENS.—See **Radio-Suisse Romande.**

STOCKHOLM

Call SASA; 436.5 metres; 55 kW. Relayed by **Boden, 1,229.5 metres: Göteborg, 322 metres; Horby, 257 metres; Motala, 1,348 metres; Ostersund, 770 metres;** and **Sundsvall, 542 metres.**—3.0 p.m., Orchestral Concert: Overture, Berliner Luft (Lincke); Liederwalzer (J. Strauss); Minuet (Delmas); Vision d'amour (Wickman); Selection from Tannhäuser (Wagner); Waltz Intermezzo (Rusch); Potpourri, Ein Sängerfahrt nach Wien (Silving). 4.5, Programme for Children. 4.30, Popular Music on Gramophone Records. 5.15, The Practical Corner. 5.30, Orchestral Concert of Old Dance Music. 6.15, Weather and News. 6.30, Dialogue. 6.45, Cabaret Programme. 7.15 (from **Göteborg**), Talk. 7.45, Light Music by Edith Lorand's Orchestra. 8.45, Weather and News. 9.0 (approx.), Part Relay of a Revue. 10.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30 a.m., Concert of Classical Music, conducted by M. de Villars. 12.45 p.m., News. 1.0, Time and Exchange Quotations. 1.5, Quintet Concert, relayed from **Bordeaux-Lafayette.** 1.50, Dance Music on Gramophone Records. 3.0 to 3.30, Interval. 3.30, Popular Concert, relayed from **Lille (265.4 metres).** 4.30, Talk on Music: Frédéric Chopin. 4.45, Legal Talk in German. 5.0, Pasdeloup Symphony Concert, relayed from the Théâtre des Champs Elysées, Paris. 7.0, Agricultural Talk. 7.15, Popular Music on Gramophone Records. 7.30, Time and News. 7.45, Light Music on Gramophone Records. 7.55, Lottery Results. 8.0, Alsatian Evening. 9.30, Concert relayed from the Café Moll, Mulhouse: Overture, La Dame Blanche (Boieldieu); Waltz, Etincelles (Waldteufel); Sumatra Coolies (Jessel); Enlevez-moi (Gabatoche); Saxophone Solo: Selection from Mignon (Thomas); Minuet (Paderewski); Selection from Lakmé (Delibes); Wedgwood Blue (Ketelbey); D'une Prison (Hahn); The Student Passes by (Danez). 11.0, Quintet Concert relayed from **Coloniale (Paris) (25.63 metres).** Overture, Mireille (Gounod); Air (Bach); Selection from Carmen (Bizet); Chanson (Friml); Roses of Picardy (Haydn-Wood); Waltz, A toi (Waldteufel); Selection from Ciboulette (Hahn). 12 Midnight (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and **FREIBURG, 570 metres.**—11.20 a.m., Song Recital by Margarete Kramer (Contralto); Song Cycle, Trauer und Trost (Cornelius): (a) Trauer, (b) Angedenken, (c) Ein Ton, (d) An den Traum, (e) Treue, (f) Trost; Songs (Max Reger): (a) Das Dorf, Op. 97, (b) Ein Drängen, Op. 97. 11.50, Ski-ing Songs to the Lute by Heinz Eschwege: Der Winter ist kommen; Winterjodler; Warnung; Bindungslied; Skihupferl. 12.10 p.m., Gramophone Records: Waltz from The Dollar Princess (Fall); Selection from Countess Maritza (Kálmán); Waltz from Die Forsterchristel (Jarno); Waltz from A Waltz Dream (O. Straus). 12.30, Concert from **Langenberg.** 1.30, Time, News, Weather, and Programme Announcements. 1.40, The Care of a City—Radio Pictures of Stuttgart, IV: A Grand Spring Cleaning. 2.30, Programme from **Frankfurt.** 3.30, Dance Music on Gramophone Records: Foxtrot, Good Evening (Evans); Foxtrot, Auf Wiederschen, my dear (Hoffmann); Tango (Hajos and Karlick); Slow Foxtrot, Du wärst was für mich (Gilbert); Two Pieces (Perl): (a) Cowboy, (b) Foxtrot, Ducky; Love Waltz (Molloy); Waltz from Venus auf Erden (Lincke); Tango, So ein Mädel vergisst man nicht (Erwin and Gilbert); Tango, Signorina, ich liebe dich (Kaper). 4.0, See **Munich.** 5.15, Time and Sports Notes. 5.25, Talk: Modern Life Construction. 5.50, Time, News, Weather and Snow Report. 6.0, See **Frankfurt.** 7.0, See **Berlin (Witzleben).** 9.0, Time, News, Weather, Snow Report and Programme Announcements. 9.20, Dance Music on Gramophone Records. 10.30, Dance Music, relayed from **London.** 12.0 **Midnight** (approx.), Close Down.

SUNDSVALL.—See **Stockholm.**

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—6.0 p.m., News Bulletin. 6.15, Sound Film Music. 6.30, Ballet égyptien (Luigini). 6.45, Popular Melodies. 7.0, Operetta Music. Selection from (a) Passer la Bouche (Yvain) and (b) Le Vingt-huit Jours de Clairette (Roger). 7.15, News. Racing Results and Market Prices. 7.25, Local News. 7.30, Accordion Solos. 7.45, Opera Music. Aria from La Traviata (Verdi); Air from Mignon (Thomas); Melody from Carmen (Bizet). 8.0, Concert of Light Music. 8.30, Operetta Airs. Melodies from (a) Rip Van Winkle (Planquette), (b) Tip Toes (Gershwin), and (c) Cibolette (Hahn). 8.45, Music by an Argentine Orchestra. 9.0, Extracts from The Pearl Fishers—Opera (Bizet), followed by Music by a Viennese Orchestra. 10.0, Violin Solos. Air from Les Millions d'Arlequin (Drigo); Hungarian Poem (Hubay); Invitation des petits tambours (Poliakin); 10.15, North African News. 10.30, Concert for Listeners in Morocco: Marche des petits Pierrots (Bosc); Selection from The Land of Smiles (Lehár); Air from Thaïs (Massenet); Selection from Veronique (Messager); Gilda's Aria from Rigoletto (Verdi); Manola (Liberati). 11.0, Request Concert. 1.30, Programme in English by the I.B.C.: Dance Music: My Love Parade; A Little Kiss each Morning; Alone in the Rain; Go to bed; Out of the Blue; Maybe it's the Moon; Waltz away; Pardon me, Pretty Baby. 12 Midnight, Weather and Announcements. 12.5 a.m. (Sunday), Organ Solos. 12.15, Military Band Music. 12.30 (approx.), Close Down.

TRIESTE

247.7 metres; 10 kW.—4.10 to 6.30 p.m., See **Turin.** 6.30, Castelnuovo-Tedesco Recital for Violin and Pianoforte by Magda Tusberti and Enrico Martucci: Ritmi; Notturno adriatico; Capitan Fracassa. 7.0 till Close Down, See **Turin.**

TRONDHEIM.—See **Oslo.**

TURIN

273.7 metres; 7 kW. Relayed by **Milan, 331.5 metres; Genoa, 312.8 metres;** and **Florence, 500.8 metres.**—4.10 p.m., Dance Music from the Select Savoia. 5.0 to 5.25, Interval. 5.35, Giornale Radio. Lottery Results. Agricultural Report, and Dopolavoro Notes. 6.0, Giornale Radio. 6.10, Popular Music on Gramophone Records. 6.25, Tourist Talk. 6.30, Time, Announcements, and Variety Music on Gramophone Records. 7.0, Giornale Radio. Weather, and Light Music on Gramophone Records. 7.30, Talk: Events and Problems. 7.45, Variety Programme. 8.45, Review of New Books. 9.0, Dance Music. 10.0, Giornale Radio.

VATICAN CITY

19.84 metres (Morning) and **50.26 metres (Evening);** 10 kW.—10.0 to 10.15 a.m., Religious Announcements in Different Languages. 7.0 to 7.15 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by **Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 245.9 metres,** and **Salzburg, 218.5 metres.**—4.10 p.m., Italian Lesson. 4.35, Concert by the Johann Wilhelm Gangberger Orchestra. Soloists: Kurt Hirschkron (Violin) and Hansl and Loisl (Yodelling). March, Tiroler Adler (Achleitner); Overture, Joan of Arc (Verdi); Violin Solo: Rêverie (Vieuxtemps); Waltz, La belle Adrienne (Lehár); Yodelling Songs: (a) Auf der Alm, do is so lustig, (b) Es gibt jo nur a Zillertal allein; Potpourri, Eine Sängerfahrt nach Wien (Silving); Waltz, So tanzt man in Wien (Pausperl); Yodelling Songs: (a) I bin a Steirerbua, (b) Alpenkönig; Potpourri of Popular Songs (Borchert). 6.45, Talk on the Twentieth Anniversary of Franz Schumacher's Death. 6.5, Topical Talk. 6.35, Time, Weather, Sports Notes and Programme Announcements. 6.45, Report on the International Ski-ing Campienships at Innsbruck. 7.0, See **Berlin (Witzleben).** 9.0, News, Weather and Announcements. 9.15, Dance Music by the Charly Gaudriot Jazz Band, relayed from Hübners Parkhotel Schönbrun. Soloist: Leo Greiner (Songs).

WARSAW

1,411 metres; 120 kW.—11.10 a.m., Light Music on Gramophone Records. 12.10 p.m., Weather Forecast. 12.15, Programme for Schools, relayed from **Lwów (381 metres).** 12.55 to 2.10, Interval. 2.10, Announcements. 2.15, Talk on Economics. 2.25, Talk on Military Affairs. 3.0, Popular Music on Gramophone Records. 3.40, Talk on Malaga. 4.0, Programme for Invalids, relayed from **Lwów.** 4.30, Announcements. 4.40, Topical Talk. 4.55, Programme Announcements. 5.0, Light Orchestral Concert, relayed from the Cristal Restaurant. In the interval: News. 6.0, Miscellaneous Items. 6.20, Agricultural Notes. 6.30, Topical Talk. 6.45, Radio Journal. 7.0, Concert of Light Music by the Station Orchestra, conducted by S. Navrot, and a Women's Choir. Overture, Pique Dame (Suppé); Barcarolle (Bulleria); Waltz, Gallantry (Leopold); Three Songs for Choir; Suite carnavalesque (Gebel-Marie); Three Songs for Choir; Waltz, Etoile polaire (Waldteufel); Potpourri, Major and Minor (Schreiner); Overture, Orpheus in the Underworld (Offenbach); Czardas from Der Geist des Wojewoden (Grossmann). In the interval: Sports Notes and Radio Journal. 9.5, Chopin Pianoforte Recital by L. Szpinalski; Ballad in F Minor; Two Etudes: (a) in C, Op. 10, (b) in C Sharp Minor; Variations in B Flat, Op. 12; Scherzo in G Minor. 9.40, Reading. 9.55, Weather Forecast for Aviation and Police Notes. 10.0, Dance Music relayed from the Bodega. In the interval at 10.30 (approx.), News for Members of the Polish Polar Expedition. 11.0 (approx.), Close Down.

ZAGREB

307 metres; 0.75 kW.—4.0 to 5.30 p.m., Popular Music on Gramophone Records. 6.40, Announcements. 7.0, Concert of Light Music by the Radio Orchestra. Soloists: Mila Popovic-Mosinger (Soprano) and Milan Sepec (Tenor). 9.0, News, Weather and Snow Report. 9.15, Dance Music, relayed from the Esplanade Hotel. 10.30 (approx.), Close Down.

ZURICH.—See **Schweizersicher Landessender.**

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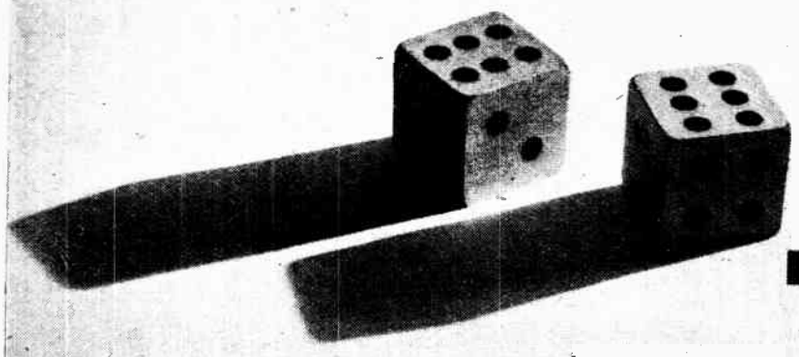

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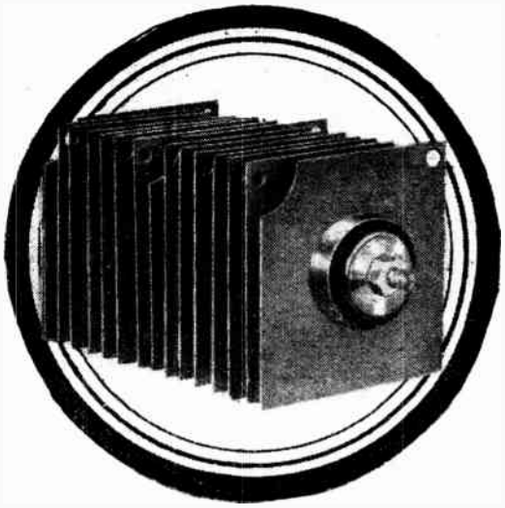

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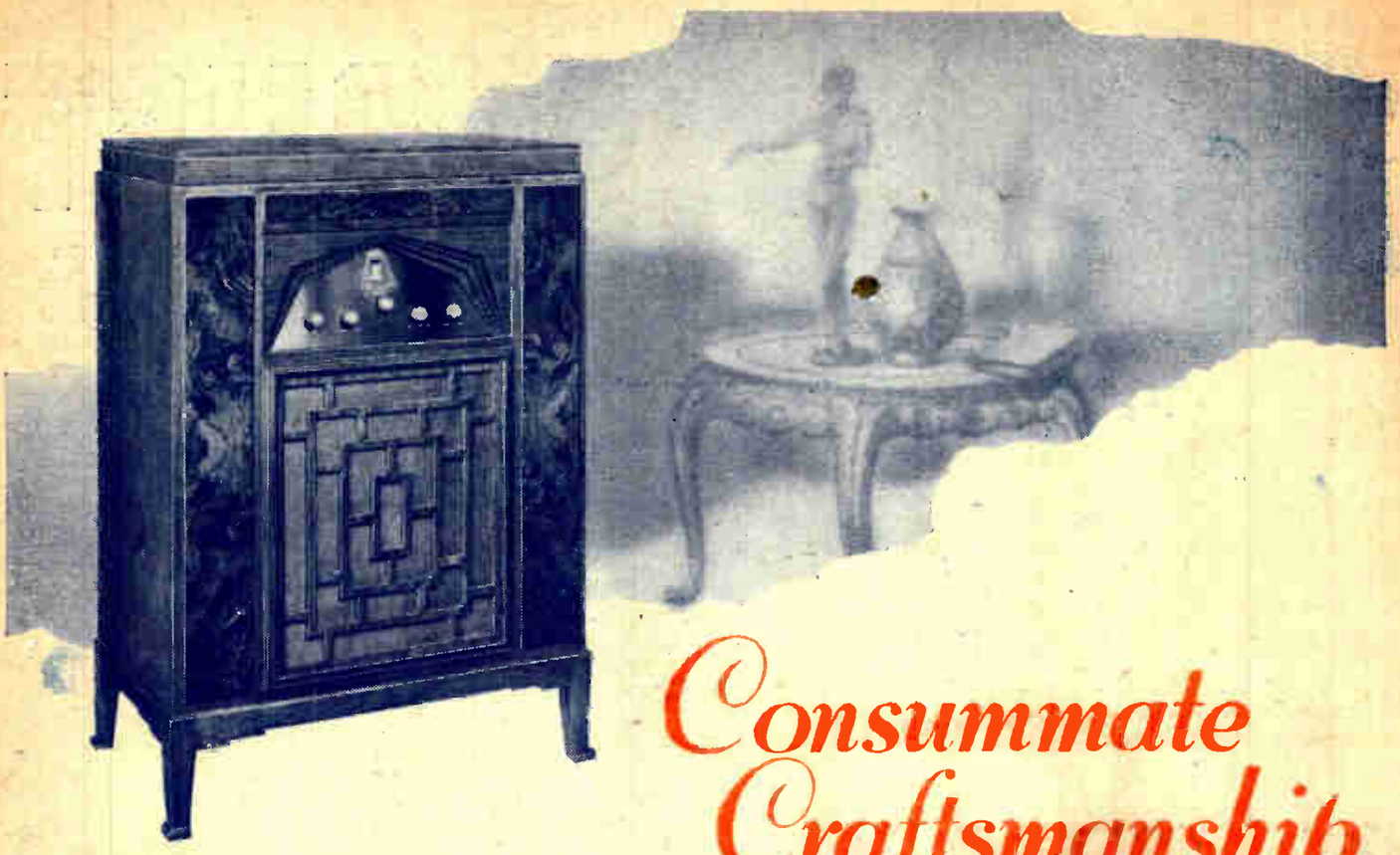

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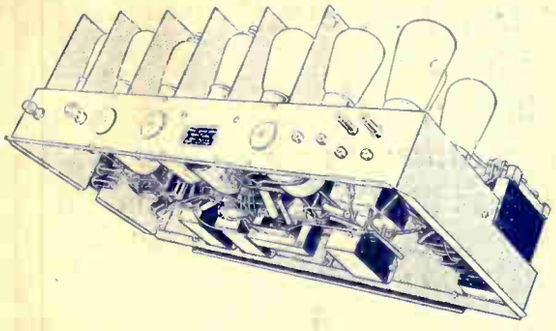

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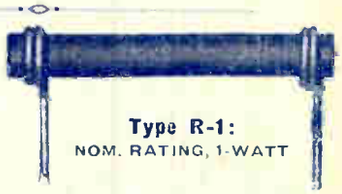

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LYONS' "B.A.T." (Best-After-Test) FIXED RESISTANCES are obtainable promptly from all good dealers in over 200 stock values from 100 Ohms to 20 Megohms, and in nominal power ratings of ½, ¼, 1, 2, 3 and 5-Watts.

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R&A

The "VICTOR."

A leader among P.M. Moving Coil Reproducers, giving as it does reproduction of speech and music as closely resembling the original performance as is possible in the present stage of loud speaker development. Perfectly even response throughout the complete musical scale. Complete with 6-ratio Ferranti Transformer. 70/-.

PRICES FROM 15/- to 70/-.

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REPRODUCERS & AMPLIFIERS LTD.
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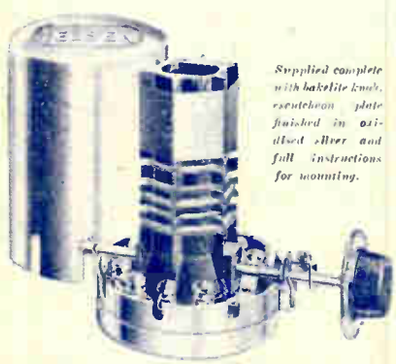
TELSEN SCREENED TUNING COILS



Supplied complete with bakelite knob, escutcheon plate finished in oxidised silver and full instructions for mounting.

SUITABLE as aerial coils, or as anode coils, following a S.G. valve, giving selectivity comparable with a well-designed band-pass filter.

Single Screened Coil 8/6
Twin Matched Coils 17/-
Triple Matched Coils 25/6

TELSEN RADIO COMPONENTS

TELSEN RADIO COMPONENTS ARE 100% BRITISH

Announcement of the TELSEN ELECTRIC Co. Ltd., Aston, BIRMINGHAM

No. 702. Vol. XXXII. No. 6.

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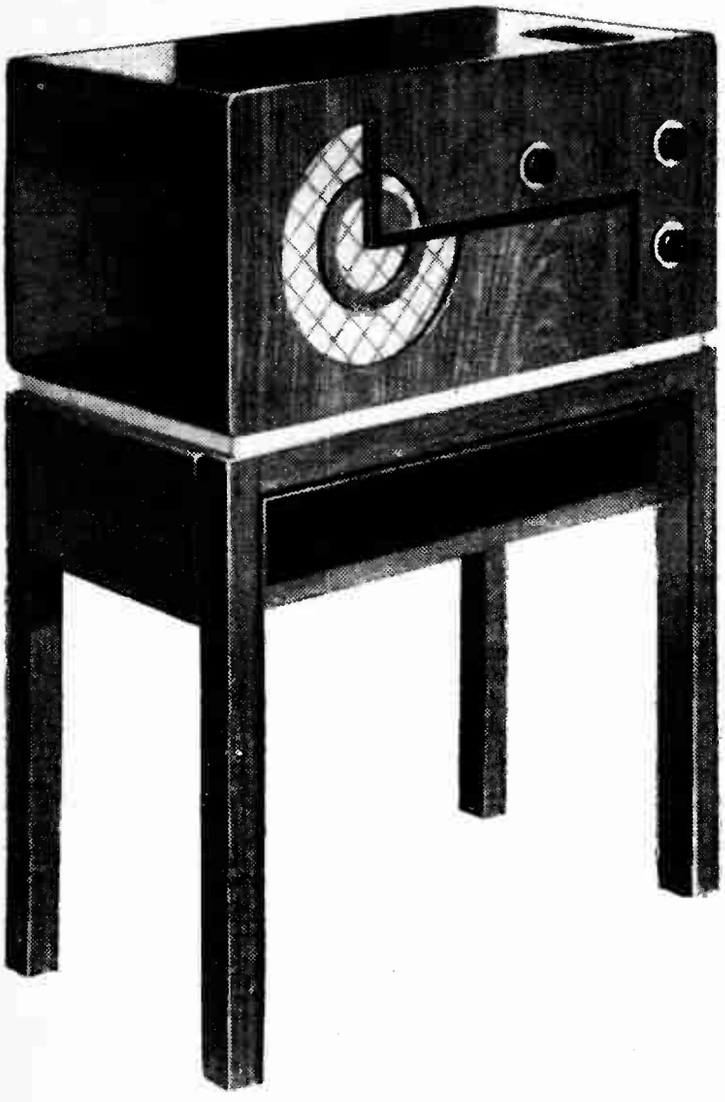


A8 SUPER-HETERODYNE RECEIVER

Nine valves, including main rectifying valve. Automatic volume control, using double diode valve. This eliminates to a great extent fading on distant stations, and forms a necessary control of volume when receiving the local stations. Manual volume control also fitted. This controls both radio and gramophone record reproduction. Single dial tuning. Scale illuminated and calibrated in wavelengths.

One main switch used for switching on set, changing from medium to long waves and putting gramophone jack in circuit. Moving Coil Speaker; undistorted power output approximately 2 watts. Walnut Cabinet. **£24**

Send a postcard for leaflet giving full particulars of Murphy sets.

4-VALVE BATTERY OPERATED - -	£12 - 10
3-VALVE ALL ELECTRIC, *with Pedestal* -	£15 - 5
3-VALVE ALL ELECTRIC, *without Pedestal* -	£13 - 10

★ *All Murphy sets are obtainable on Hire Purchase Terms.*

"Why a Superheterodyne?"

"I THINK it may be useful if I try to give shortly an answer to this question, which I know is often asked. The A8 was designed as a superheterodyne, as it was considered that in this case such a circuit would give a more economical and more consistent answer than a straight H.F.

It is very necessary, however, to keep in mind in comparing the merits of superheterodyne and straight H.F. circuits, that as regards selectivity, quality of reproduction, ease of control, etc., they are both *capable* of giving precisely the same results. The propaganda which suggests that a superhet has some great inherent advantage, and that any set is out of date if it is not a superhet, is utterly false. The choice is essentially decided by manufacturing conditions and costs, and it is quite impossible for anyone to say that a superhet is better than a straight H.F. or vice versa. One thing is quite certain; namely, that a 'cheap' superhet can be very much more unpleasant than a 'cheap' straight H.F. Numbers of people, for instance, have learnt to their cost that superhets are often very noisy. A superhet *can* be every bit as quiet as a straight H.F."

This paragraph is taken from the A8 booklet which deals with Amplification, Ease of Control, Quality of Reproduction, Selectivity, and the various problems which face a manufacturer in designing a set of the A8 type. If you would like a free copy to read, any Murphy dealer will be pleased to give you one.

Frank Murphy

B.Sc., A.M.I.E.E., A.I.Rad.E.
Chartered Elect. Engineer.

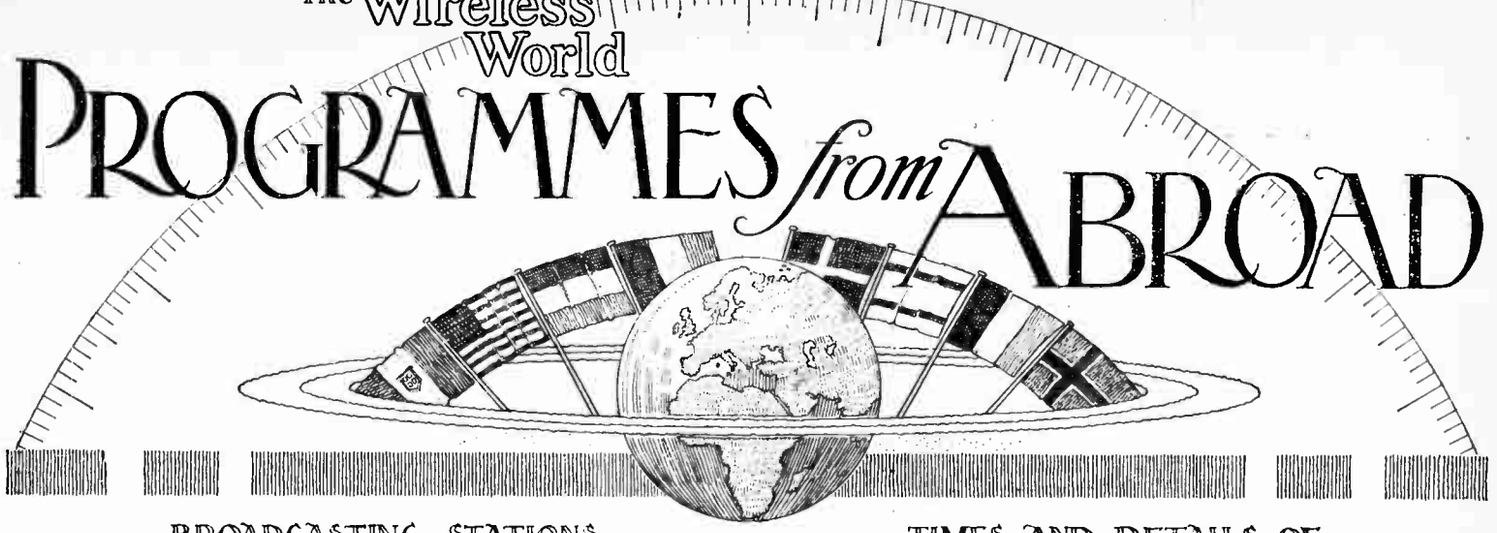
MURPHY RADIO

MURPHY RADIO LTD., WELWYN GARDEN CITY, HERTS. **Telephone: WELWYN GARDEN 80**

M.C. 257.

The Wireless World

PROGRAMMES from ABROAD



BROADCASTING STATIONS ARRANGED IN ORDER OF WAVELENGTH

TIMES AND DETAILS OF FULL WEEK'S FOREIGN TRANSMISSIONS

Metres.	Kc.	kW.	Station.	Tuning Positions.
1935	155	7	Kaunas (Kovno) (Lithuania)	
1875	160	8.5	Hilversum (Holland)	
1796	167	40	Lahti (Finland)	
1725	174	75	Radio Paris, C.F.R.	
1635	183.5	60	Zeesen (Königswusterhausen) (Germany). (*S.-W. Stn. DJA on* 31.38 *m.*)	
1554.4	193	30	Daventry National	
1538	195	7	Ankara (Angora) (Turkey)	
1481	202.5	100	Moscow, RV1 (Old Komintern) (Russia)	
1446	207.5	13	Eiffel Tower, FL, Paris	
1412	212.5	120	Warsaw I (Poland)	
1380	217.5	100	Novosibirsk, RV6 (Russia)	
1348	222.5	30	Motala (Sweden). (*Relays Stockholm*)	
1304	230	100	Moscow, WZSPS (Trade Union) (Russia)	
1275	235	0.5	Tunis-Kasbah (Tunisia)	
1230	244	0.6	Boden (Sweden). (*Relays Stockholm*)	
1200	250	5	Stamboul (Turkey)	
1200	250	21	Reykjavik (Iceland)	
1170	256	25	Tashkent, RV11 (Russia)	
1154	260	7.5	Kalundborg (Denmark). (*Relays Copenhagen*)	
1117	268.5	40	Moscow, Popoff RV58 (Russia)	
1083	277	60	Oslo (Norway)	
1071	280	35	Tiflis, RV7 (Russia)	
1035	290	36	Kiev, RV9 (Russia)	
1000	300	100	Moscow (Russia)	
938	320	20	Kharkov, RV4 (Russia)	
857	350	100	Leningrad (Russia)	
840	357	18.5	Budapest (Hungary)	
825	363.6	50	Sverdlovsk, RV5 (Russia)	
770	389	0.6	Ostersund (Sweden). (*Relays Stockholm*)	
760	395	1.3	Geneva (Switzerland). (*Relays Sottens*)	
720	416.6	20	Moscow, RV2 (Experimental) (Russia)	
690	434.6	1.5	Oulu (Uleaborg) (Finland)	
680	441.2	0.6	Lausanne (Switzerland). (*Relays Sottens*)	
574.7	522	2.5	Ljubljana (Yugoslavia)	
569	527	0.25	Freiburg-im-Breisgau (Germany). (*Relay Stn.*)	
568.1	528	2	Grenoble (France)	
566	530	0.25	Hanover (Germany). (*Relays Hamburg*)	
563	533	16	Wilno (Poland). (*Relay Station*)	
560	536	0.25	Augsburg (Germany). (*Relays Munich*)	
560	536	0.7	Hamar (Norway). (*Relays Oslo*)	
560	536	1.5	Kaiserslauten (Germany). (*Relays Munich*)	
558.6	537	1	Tampere (Finland). (*Relays Helsinki*)	
550	545	18.5	Budapest No. 1 Lakihegy (Hungary)	
542	554	3	Palermo (Italy)	
542	554	10	Sundsvall (Sweden). (*Relays Stockholm*)	
533	563	60	Munich (Germany)	
525	571	15	Riga (Latvia)	
517	580	15	Vienna (Rosenhügel) (Austria)	
509	589	15	Brussels No. 1, Velthem (Belgium). (*In French*)	
500.8	599	20	Florence, IFI (Italy). (*Relays Turin*)	
495.8	605	1.2	Trondheim (Norway)	
488.6	614	120	Prague, No. 1 (Czechoslovakia)	
480	625	50	North Regional (Manchester)	
472.4	635	60	Langenberg (Germany)	
467	642	0.4	Aalesund (Norway)	
465.8	644	1.5	Lyons la Doua, PTT (France)	
459.4	653	60	Beromünster (Schweizerischer Landessender) (Switzerland).	
453.2	662		San Sebastian, EAJ8 (0.6 kW.): Pori (1.0 kW.) (Finland); Danzig (0.5 kW.) (*relays Heilsberg*); Klagenfurt (0.5 kW.) (Austria) (*relays Vienna*): Porsgrund (0.7 kW.) (*relays Oslo*), Tromsö (0.1 kW.), Bodö (0.5 kW.) (Norway); Upsala (0.15 kW.) (Sweden) (*relays Stockholm*).	
453.2	662	10	Odessa, RV13 (Russia)	
447.1	671		Paris, Ecole Supérieure, PTT (7.0 kW.); Rjukan (0.15 kW.), Notodden (0.08 kW.) (Norway) (*relays Oslo*).	
441.2	680	50	Rome, 1RO. (*S.-W. Station, 2RO on* 25.4 *m.*)	
435.4	689	55	Stockholm, SASA (Sweden)	
430	698	2.5	Belgrade (Yugoslavia)	
424.3	707	2	Madrid, EAJ7 (Union Radio). (*After* 7.0 *p.m.*)	
424.3	707	100	Moscow, Imini Stalina (Russia)	
419.5	715	1.5	Berlin, No. 1, Witzleben (Germany)	
416.4	720.5	5	Rabat (Morocco)	
413	725	1.2	Dublin (Irish Free State)	
413	725	80	Athlone (Irish Free State) (Testing after 10.30 p.m.)	
408.7	734	16	Katowitz (Poland)	
403.8	743	25	Sottens (Radio Suisse Romande) (Switzerland)	
398.9	752	25	Midland Regional	
394.2	761	12	Bucharest (Roumania)	
389.6	770	120	Leipzig (Germany)	
389.6	770	10	Archangel, RV36 (Russia)	
385.1	779	8	Toulouse (Radiophonie du Midi) (France)	
385.1	779	10	Stalino, RV26 (Russia)	
381	788	16	Lwow (Lemburg) (Poland)	
376.4	797	50	Scottish Regional (Falkirk)	
372.2	806	1.5	Hamburg (Germany)	
370.1	810.5	0.8	Radio, LL, Paris	
368.1	815		Seville, EAJ5 (Union Radio) (1.0 kW.) (Spain); Bolzano (1.9 kW.) (Italy); Helsinki (10 kW.) (Finland) (*relays Lahti*); Kharkov, RV29 (10 kW.) (Russia).	
367.6	816	0.7	Fredriksstad (Norway). (*Relays Oslo*)	
364.1	824	1	Bergen (Norway)	
363.6	825	13	Algiers (Algeria)	
360.6	832	60	Mühlacker (Stuttgart) (Germany)	
355.9	843	50	London Regional (Brookmans Park)	
352.1	852	7	Graz (Austria). (*Relays Vienna*)	
348.8	860	7.6	Barcelona, EAJ1 (Spain)	
348.8	860	10	Leningrad, RV70 (Russia)	
345.2	869	11.5	Strasbourg, PTT (France)	
341.7	878	35	Brno (Brunn) (Czechoslovakia)	
338.2	887	15	Brussels II, Velthem (Belgium). (*In Flemish*)	
335	896	5	Cadiz (Spain)	
334.4	897	1.9	Poznan (Poland)	
331.5	905	50	Milan (Italy). (*Relays Turin*)	
328.2	914	60	Poste Parisien (France)	
325	923	60	Breslau (Germany)	
321.9	932	10	Göteborg (Sweden). (*Relays Stockholm*)	
318.8	941	0.25	Dresden (Germany). (*Relays Leipzig*)	
318.8	941	1.5	Naples, INA (Italy). (*Relays Rome*)	
315.8	950	1.6	Marseilles, PTT (France)	
312.8	959	1.7	Cracow (Poland)	
312.8	959	10	Genoa, IGE (Italy). (*Relays Turin*)	
309.9	968	1	Cardiff	
307	977	0.7	Radio Vitus (Paris). (*S.-W. Stn. on* 43.75 *m.*)	
304	986	13	Bordeaux Lafayette, PTT (France)	
301.5	995	50	North National (Manchester)	
298.8	1004	11	Tallinn (Esthonia)	
296.1	1013	20	Huizen (Holland). (*After* 4.40 *p.m.*) (*Exchanges wavelengths with Hilversum every three months.*)	
293.5	1022	0.7	Limoges, PTT (France)	
293.5	1022	2.6	Kosice (Czechoslavakia)	
291	1031	10	Viipuri (Viborg) (Finland). (*Relays Helsinki*)	
288.3	1040	50	Scottish National (Falkirk)	
288.3	1040	—	British Relays (Bournemouth, Plymouth)	

BROADCASTING STATIONS ABROAD (In Order of Wavelength).

Metres.	Kc.	kW.	Station.	Tuning Positions.
286	1049	0.8	Montpellier (France)	
285.1	1052	0.7	Lyons (Radio-Lyon) (France)	
283.6	1058	0.5	German Relays (Berlin, Magdeburg, Stettin)	
283.6	1058	0.5	Innsbruck (Austria). (*Relays Vienna*)	
282.2	1063	2	Lisbon CT 1AA (Portugal). (*Short-wave Station on* 31.25 *m.*)	
281.2	1067	0.75	Copenhagen (Denmark)	
278.8	1076	13.5	Bratislava (Czechoslovakia)	
276.5	1085	60	Heilsberg (Germany)	
273.7	1096	7	Turin (Italy)	
271.5	1105	1.3	Rennes, PTT (France)	
269.8	1112	20	Bari (Italy)	
269.8	1112	0.25	Bremen (Germany). (*Relays Hamburg*)	
267.6	1121	1.5	Valencia (Spain)	
265.8	1128.5	1.3	Lille, PTT (France)	
263.8	1137	11.2	Moravska Ostrava (Czechoslovakia)	
261.5	1147	50	London National (Brookmans Park)	
259.3	1157	17	Frankfurt-a.M. (Germany)	
257.1	1167	10	Hörby (Sweden). (*Relays Stockholm*)	
255.1	1176	0.7	Toulouse, PTT (France)	
253.1	1185	5	Gleiwitz (Germany). (*Relays Breslau*)	
252	1193	1	Barcelona, EA.115 (Assoc. Nat.) (Spain)	
249.6	1202	0.8	Juan-les-Pins, Nice (France)	
247.7	1211	10	Trieste (Italy)	
245.9	1220	0.12	Swansea	
245.9	1220		Berne (0.5 kW.) (Switzerland) (*relays Beromünster*): Eskilstuna (0.2 kW.), Sätlle (0.4 kW.) (Sweden) (*relays Stockholm*); Cassel (0.25 kW.) (Germany) (*relays Frankfurt*); Linz (0.5 kW.) (Austria) (*relays Vienna*); Pietarsaari (0.5 kW.), Turku (Abo) (0.5 kW.) (Finland) (*relays Helsinki*); Schaerbeek (0.1 kW.) (Belgium)	
244.1	1229	0.5	Basle (Switzerland). (*Relays Beromünster*)	
242.3	1238	1	Belfast (N. Ireland)	
240.6	1247	0.5	Stavanger (Norway)	
238.9	1256	2	Nürnberg (Germany). (*Relays Munich*)	
238	1260	1	Nimes (France)	
237.2	1265	3	Bordeaux, Sud-Ouest (France)	
235.5	1274	0.5	Kristiansand (Norway)	
235	1283	1.65	Lodz (Poland). (*Relay Station*)	
232.2	1292	0.25	Kiel (Germany). (*Relays Hamburg*)	
230.6	1301	—	Swedish Relay Stations. (Malmö, Norrköping, Karlstad and Trollhätten).	
229	1310	0.5	Umea (Sweden)	
227.4	1319	0.5	Flensburg (Germany). (*Relays Hamburg*)	
224.4	1337	1	Cork (Irish Free State)	
223	1345	10	Fécamp, Radio-Normandie (France)	
222.9	1346	0.15	Hüdiksvall (Sweden)	
219.9	1365	1.5	Béziers (France)	
218.5	1373	0.5	Salzburg (Austria). (*Relays Vienna*)	
217	1382	0.5	Königsburg (East Prussia) (Germany)	
217	1382	0.25	Karlstad (Sweden)	
215.6	1391	0.1	Brussels, Radio-Chatelineau (Belgium)	
214.3	1400	1	Aberdeen	
214.3	1400	10	Warsaw, No. 2 (Poland)	
211.3	1420	1	Newcastle	
209	1430	0.8	Magyarovar and Miskolcz (Hungary)	
207	1450	0.15	Boras (Sweden)	
206	1460	0.2	Ornsköldsvik (Sweden)	
204.1	1470	0.2	Gävle (Sweden)	
202.7	1480	0.25	Kristineham (Sweden)	
201.3	1490	0.25	Hälsingborg (Sweden)	
195	1530	0.2	Karlskrona (Sweden)	

PRINCIPAL SHORT-WAVE STATIONS.

(N.B.—Times of Transmission, given in parentheses, are approximate only and represent G.M.T.)

Metres.	Kc.	Call Sign.	Station.	Tuning Positions.
80.0	3,750	2RO	Rome	
70.2	4,273	RW15	Khabarovsk (Russia). (*Daily* 09.00–12.00)	
62.56	4,795	VE9HY	London, Ont. (Canada). (*Sun.* 06.00)	
62.5	4,800	W2XV	Long Island, N.Y. (U.S.A.). (*Fri.* 24.00)	
58.3	5,146	PMY	Bandoeng (Java). (*Daily* 12.20 *and* 07.00.)	
58.0	5,172	OK1MPT	Prague (Czechoslovakia). (*Tues. and Fri.* 19.30.)	
54.52	5,502	W2XBH	Brooklyn, N.Y. (U.S.A.). (*Relays WCGU*)	
52.7	5,690	FIU1	Tananarive, P.T.T. (Madagascar)	
52.5	5,714	HCJB	Quito (Ecuador). (*Daily* 12.30)	
51.22	5,857	XDA	Chapultepec (Mexico)	
50.6	5,930	HKO	Medellin (Colombia)	
50.26	5,970	HVJ	Vatican State, Rome. (*Daily* 19.00)	
50.0	6,000	ZL3ZC	Christchurch (New Zealand). (*Wed.* 03.00, *Sat.* 07.30.)	
50.0	6,000	—	Bucharest (Roumania)	
50.0	6,000	RW59	Moscow	
50.0	6,000	EA R25	Barcelona, Radio Club (Spain). (*Sat.* 20.00.)	
49.96	6,005	VE9DR	Drummondville (Canada). (*Relays CFCF*, 01.00-05.00.)	
49.96	6,005	HRB	Tegucigalpa (Honduras). (*Daily ex. Sun.* 00.00–05.00.)	
49.83	6,020	W9XF	Chicago, Ill. (U.S.A.). (*Relays WENR*)	
49.8	6,023	XEW	Mexico City (Mexico). (*Daily* 01.00)	
49.67	6,042	W2XAL	Coytesville, N.J. (U.S.A.). (*Relays WRNY.*)	
49.59	6,050	VE9HX	Halifax (Nova Scotia). (*Relays CHNS*)	
49.58	6,050	GSA	Empire Broadcasting, Zones 4–5	
49.5	6,060	VQ7LO	Nairobi (Kenya Colony). (*Daily* 16.30)	
49.5	6,060	W8XAL	Mason, Ohio (U.S.A.). (*Relays WLW*)	
49.5	6,060	W3XAU	Philadelphia, Pa. (U.S.A.). (*Relays WCAU.*)	
49.43	6,069	VE9CS	Vancouver, B.C. (Canada)	
49.4	6,072	UOR2	Vienna. (*Tues.* 13.00, *Thurs.* 15.00, *Sat.* 23.00.)	
49.34	6,080	W2XCX	Kearny, N.J. (U.S.A.). (*Relays WOR*)	
49.34	6,080	W9XAA	Chicago, Ill. (U.S.A.). (*Relays WCFL*)	
49.22	6,095	VE9GW	Bowmanville, Ont. (Canada). (*Daily* 20.00)	
49.2	6,098	ZTJ	Johannesburg (S. Africa). (*Weekdays* 09.00, 11.00 [*Sat.* 14.30] *and* 17.00, *Sun.* 13.00 *and* 17.30.)	
49.18	6,100	W3XAL	Bound Brook, N.Y. (*Relays WJZ*)	
49.1	6,110	VUC	Calcutta, India. (*Daily* 13.00)	
49.02	6,120	W2XE	Long Island, N.Y. (U.S.A.). (*Relays WABC.*)	
48.86	6,140	W8XK	East Pittsburg, Pa. (U.S.A.). (*Relays KDKA.*)	
48.8	6,147	VE9CL	Winnipeg (Canada). (*Daily ex. Sun.* 00.30)	
48.65	6,167	X1F	Mexico City (Mexico)	
48.35	6,205	HKC	Bogota (Colombia). (*Daily* 15.00)	
48.2	6,220	2RO	Rome (Italy)	
48.05	6,243	HKD	Barranquilla (Colombia). (*Weekdays* 23.45)	
48.0	6,250	CN8MC	Casablanca (Morocco). (*Relays Rabat*)	
47.0	6,382	HC1DR	Quito, Ecuador. (*Daily* 01.00)	
46.69	6,425	W3XL	Bound Brook, N.J. (U.S.A.). (*Relays WJZ irregular.*)	
46.67	6,426	VE9BY	London, Ont. (Canada). (*Sat.* 01.00 *Sun.* 02.00.)	
45.38	6,611	REN	Moscow (*Relays Trade Union Stn.*)	
45.0	6,667	FM8KR	Constantine (Algeria). (*Mon. and Fri.* 23.00.)	
45.0	6,667	TGW	Guatemala City (Central America). (*Daily* 03.00.)	
43.75	6,860	—	Radio Vitus, Paris. (*Daily* 20.30)	
43.0	6,970	EAR11O	Madrid. (*Tues. and Sat.* 22.30)	
41.7	7,195	VS1AB	Singapore (Malay States). (*Sun. and Wed.* 15.30.)	
41.6	7,211	EAR58	Teneriffe (Radio Club) (Canary Islands)	
41.5	7,230	HB9D	Zurich (Radio Club) (Switzerland). (*1st and 3rd Sun.*)	
41.0	7,320	HSP2	Bangkok (Siam). (*Mon.* 14.00)	
40.3	7,443	HBQ	Radio Nations, Prangins (Switzerland). (*Sun.* 22.00-22.45)	
39.7	7,556	HKF	Bogota (Colombia). (*Westinghouse Labs.*)	
39.4	7,612	X26A	Nuevo Laredo (Mexico). (*Thurs.* 16.00)	
38.7	7,797	HBL	Radio Nations, Prangins (Switzerland). (*Sun.* 22.00-22.45.)	
36.92	8,125	PLW	Bandoeng (Java). (*Daily* 10.00-11.00)	
34.68	8,650	W2XV	Long Island, N.Y. (U.S.A.). (*Fri.* 23.00)	
34.68	8,650	VE9BY	London, Ont. (Canada). (*Mon.* 21.00)	
33.50	8,928	TGX	Guatemala City (S. America)	
32.26	9,300	—	Rabat (Morocco). (*Sun.* 21.00)	
31.58	9,500	PRBA	Rio de Janeiro (Brazil). (*Daily* 21.30)	
31.55	9,510	VK3ME	Melbourne (Australia). (*Wed. and Sat.* 10.00.)	
31.54	9,510	GSB	Empire Broadcasting, Zones 2, 4, 5	
31.51	9,520	OXY	Skamlebaek (Denmark). (*Relays Copenhagen.*)	
31.48	9,530	W2XAF	Schenectady, N.Y. (U.S.A.). (*Relays WGY*)	
31.38	9,560	DJA	Zeesen (Germany). (*Daily* 13.00)	
31.35	9,570	SRI	Posen (Poland). (*Tues. and Thurs.* 17.30)	
31.35	9,570	W1XAZ	East Springfield, Mass. (U.S.A.). (*Relays WBZ.*)	
31.3	9,582	W3XAU	Philadelphia, Pa. (U.S.A.). (*Daily ex. Thurs. and Fri.* 21.00.)	
31.3	9,580	HBL	Radio Nations, Prangins (Switzerland). (*Sun.* 22.00-22.45)	
31.29	9,585	GSC	Empire Broadcasting, Zone 3	
31.28	9,590	VK2ME	Sydney (Australia). (*Sun.* 10.00)	
31.25	9,598	CT1AA	Lisbon (Portugal). (*Tues. and Fri.* 22.00-24.00)	
31.10	9,640	HS2PJ	Bangkok (Siam). (*Mon.* 02.00–05.00)	
30.43	9,869	EAQ	Aranjuez (Spain). (*Daily* 23.30, *Sat.* 18.00)	
30.0	10,000	—	Belgrade (Yugoslavia). (*Mon.* 19.00)	
29.3	10,228	TI4NRH	Heredia (Costa Rica). (*Daily* 22.00 *and* 02.00.)	
28.98	10,350	LSX	Buenos Aires (Argentina). (*Daily* 20.30)	
26.83	11,180	CT3AQ	Funchal (Madeira). (*Tues. and Thurs.* 10.30–12.30.)	
25.63	11,700	FYA	Pontoise (France). (*Colonial Stn. E-W, daily* 20.00.)	
25.6	11,720	VE9JR	Winnipeg (Canada). (*Daily ex. Sat. and Sun.* 17.45)	
25.53	11,750	GSD	Empire Broadcasting, Zones 1 & 4	
25.5	11,760	XDA	Chapultepec (Mexico). (*Daily* 20.00)	
25.4	11,810	VE9GW	Bowmanville (Canada). (*Daily* 18.00)	
25.4	11,810	2RO	Prato Smeraldo, Rome. (16.00 *and* 19.30)	
25.34	11,840	W9XAA	Chicago, Ill. (U.S.A.). (*Relays WCFL*)	
25.28	11,865	GSE	Empire Broadcasting, Zone 2	
25.27	11,870	W8XK	East Pittsburg, Pa. (U.S.A.). (*Relays KDKA.*)	
25.2	11,905	FYA	Pontoise (France). (*Colonial Stn. N-S*)	
23.38	12,830	—	Rabat (Morocco). (*Sun.* 11.30)	
20.5	14,630	XDA	Chapultepec (Mexico). (*Daily* 19.30)	
19.9	15,075	TI4NRH	Heredia (Costa Rica). (*Sat., Sun., Mon.* 16.00 *and* 21.00)	
19.84	15,120	HVJ	Vatican State, Rome. (*Daily* 10.00)	
19.81	15,140	GSF	Empire Broadcasting, Zone 5	
19.73	15,200	DJB	Zeesen (Germany). (*Daily* 13.00–17.00)	
19.72	15,210	W8XK	East Pittsburg, Pa. (U.S.A.) (*Relays KDKA.*)	
19.68	15,244	FYA	Pontoise (France). (*Colonial Stn. E-W*)	
19.56	15,340	W2XAD	South Schenectady, N.Y. (U.S.A.) (*Daily* 18.00.)	
16.9	17,750	HSP	Bangkok (Siam). (*Sun. and Tues.* 21.00)	
16.88	17,770	GSG	Empire Broadcasting, Zone 2	
16.87	17,780	W3XAL	Bound Brook, N.J. (*Weekdays* 13.00)	
16.57	18,105	W9XAA	Chicago, Ill. (U.S.A.). (*Relays WCFL*)	
14.47	20,730	LSY	Buenos Aires (Argentina). (*Sun.* 21.00)	
13.97	21,470	GSH	Empire Broadcasting, Zone 3 (*Daylight working*)	
13.92	21,540	W8XK	East Pittsburg (*Relays KDKA.*)	

FOREIGN SUNDAY PROGRAMMES

FEBRUARY THE TWELFTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL	Gramophone records (operatic duets). Rev. Canon S. C. Carpenter: "The Future Life." Military Band programme. Song recital. Welsh service. Service from St. Martin-in-the-Fields. Orchestral concert.
LONDON REGIONAL	Instrumental concert. "The Story of the Cyclops." read by Robert Farquharson. Sunday orchestral concert.
MIDLAND REGIONAL	Vocal and instrumental concert.
NORTH REGIONAL	Ballet music and songs. London Regional programme.
WEST REGIONAL	Welsh service from Caernarvon. Carolare No. 8. Orchestral concert.
SCOTTISH REGIONAL	Orchestral concert. National and London Regional programmes.
BELFAST	National and London Regional programmes.

ABROAD

BRUSSELS (No. 2)	Rimsky-Korsakov concert, by the Symphony Orchestra.
HAMBURG	Brahms-Schubert concert, by the Philharmonic Orchestra, conducted by R. Richter.
LANGENBERG	Opera: "Lohengrin." 2nd Act.
LEIPZIG	Wagner concert from Munich.
PRAGUE	Wagner concert, by the Czech Philharmonic Orchestra, and the Hlahol Choral Society.
TOULOUSE	Opera music, selections.
VIENNA	Wagner Commemoration Programme from Beyreuth.
WARSAW	Concert of Opera Music, by the Station Orchestra.

ATHLONE

413 metres; 60 kW.; and **CORK, 224.4 metres. 8.30 p.m.**, Time Signal. **8.31**, Vocal and Instrumental Concert. **11.0**, Time Signal, News, Weather Report and Close Down.

BARCELONA

RADIO-BARCELONA, Call EAJ1, 348.8 metres; 8 kW.—**11.0 a.m.**, Chimes from the Cathedral and Weather Forecast. **1.0 p.m.**, Popular Music on Gramophone Records. In an interval at **1.30**, Theatre Notes. **2.0**, Film Review, followed by Concert by the Station Sextet. **3.0**, Programme for Hospitals and other Benevolent Institutions. **4.0 to 5.0**, Interval. **5.0**, An Opera relayed from the Gran Teatro del Liceo. In the interval, Agricultural Talk in Catalan. **9.0**, A Musical Comedy on Gramophone Records. **10.45**, Chess Lesson. **11.0** (approx.), Close Down.

BASLE.—See **Schweizerischer Landessender.**

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—**10.30 a.m.**, See **Leipzig. 11.55**, Nauen Time Signal. **12.5 p.m.**, See **Hamburg. 1.0**, Talk for Parents. **1.30**, Talk: Art Treasures and Art Centres of the Nation—The Work of Andreas Schlüter. **2.0**, See **Vienna. 2.25**, Contemporary Music for Children—Was sollen wir werden?—Oratorio (Hans Grossmann). **3.10**, Programme from **Berlin (Witzleben). 3.50**, Talk: The Administrative Official. **4.15**, Lyrics by Hermann Burte. **4.30**, Talk: Versailles Discussion on the Frontiers of the East Mark. **4.55**, Trio in B Flat, op 99 (Schubert). **5.35**, Talk on Winter Relief. **6.0**, Talk: The Young Generation—the Position with regard to Parents. **6.45**, See **Vienna. 7.0**, See **Munich. 9.0**, Weather, News and Sports Notes. **9.45**, Weather Report for Shipping. **10.0**, Dance Music from **Berlin (Witzleben).** **11.0** (approx.), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—**10.30 a.m.**, See **Leipzig. 12.5 p.m.**, See **Hamburg. 1.0**, Discussion with Gramophone Records: Is your Child frightened of the Bogey Man? **1.30**, Two Winter Sports Reports. **2.0**, Programme for Children. **2.30**, Songs and Instrumental Solos on Gramophone Records. **3.10**, Celebrations for the Anniversary of the Coronation of Pope Pius XI, relayed from the Philharmonic: Catholic Male Voice Choirs, conducted by Theodor Jacobi; Organ Prelude and Papal Anthem for Trombones; Hymn for Male Voice Choir, Wind Instruments, kettledrums and Organ; Aeterne rex (Kromolicki); Address by Dr. Klausener, President of the Berlin Catholic Action. Address by his Eminence the Papal Nuncio, Mgr. Cesare Orsenigo; Motet for Male Voice Choir and Organ, Op. 137, Tu es Petrus (Mitterer). **3.50**, Trio Concert: Alfredo Casella (Pianoforte), Alberto Poltronieri (Violin) and Arturo Bonucci (Cello): Trio Sonata in B Flat (Schubert); Pianoforte Trio in D Op. 70, No. 1 (Beethoven). **4.30**, The Burden of Free Time—A Talk with Leaders of Unemployed Youth. **5.0**, Gossip of Old Berlin—Programme arranged by E. Laurence. **5.55**, The Witches' Sabbath of the Films—a Report by Dr. Kümmerlein. **6.15**, Concert, relayed from the Café Corso. **6.50**, Sports Notes. **7.0**, See **Munich. 7.45**, Choral Concert, relayed from the Beethoven Hall. **8.15**, Wagner Concert: The Station Orchestra, conducted by Eugen Jochum: Soloist: Emmi Leisner (Contralto): Songs: (a) Der Engel, (b) Stehe still, (c) Im Treibhaus, (d) Schmerzen, (e) Träume; Siegfried Idyll. **9.0**, Weather, News, and Sports Notes. **9.15** (approx.). Relay of Dance Music from the Technical College Ball in the Marmorsaal of the Zoo. **11.0** (approx.), Close Down.

BERNE.—See **Schweizerischer Landessender.**

BEROMUNSTER. — See **Schweizerischer Landessender.**

BODEN.—See **Stockholm.**

BODO.- See **Oslo.**

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—**8.0 a.m.**, Review of the Paris Morning Press, relayed from **Paris (Ecole Superieure) (447.1 metres). 12 Noon**, Concert, relayed from **Paris (Ecole Superieure). 2.0 p.m.**, Relay from **Paris**, or Relay of a Local Festival. **3.0**, Concert by the Conservatoire Concert Society, relayed from **Paris. 7.0**, Radio Journal. **7.10**, Sports Notes. **7.25**, Programme for Ex-Servicemen. **7.40**, Lottery Results. **7.45**, Light Music on Gramophone Records. **8.15**, Le Pardon de Ploermel—Opera in Three Acts (Meyerbeer), relayed from the Grand Théâtre.

BRATISLAVA

279 metres; 11 kW.—**3.0 p.m.**, Concert by the Station Orchestra, conducted by F. Dyk. **4.30**, Talk. **4.45**, Concert of Light Music, relayed from the Museum Café. **5.45**, Talk, relayed from **Kosice, 293 metres.** 6.0 till Close Down. See **Prague. 10.0** (approx.), Close Down.

BREMEN.—See **Hamburg.**

BRESLAU

325 metres; 60 kW.; and **GLEIWITZ, 253 metres.**—**11.0 a.m.**, See **Leipzig. 12.5 p.m.**, Orchestral Concert, relayed from the Deutsches Haus. **1.0**, Relay of the Double Bobsleigh Championship from Schreiberhau. **2.0**, Report on the International Ski Championships at Innsbruck, followed by Military Band Concert. In an interval, Report on the Ski Jumping Competition at Berg Isel. **3.10**, See **Berlin (Witzleben). 3.50**, Programme for Children. **4.20**, Orchestral Concert of Light Music. **5.10**, Der deutsche Rhein (Hugo Kaun). Concert by the Görlitz Glee Society, relayed from the Town Hall, Görlitz. **6.15**, Talk: The Disarmament Controversy in 1932. **6.35**, Weather for Farmers. **6.40** (approx.). Erich Heinkis reads from his Novel, Nacht über Flandern. **7.0**, See **Munich. 7.45**, String Quartet in E Flat, Op. 127 (Beethoven). **8.25**, Announcements. **8.35**, Orchestral Concert: Overture, Alessandro Stradella (Flotow); A Wedding Day on Troldhangen (Grieg); Solveig's Song (Grieg); Selection from Gasparone (Millöcker); Melody (Rubinstein); Spring Song (Mendelssohn); Hungarian Dances (Brahms); Selection from Die Puppenfee (Bayer). **9.40**, Time, Weather, News, Sports Notes, and Programme Announcements. **10.0**, Dance Music from **Berlin (Witzleben). 11.0** (approx.). Close Down.

BRNO

342 metres; 25 kW.—**4.30 p.m.**, Recital of Czech Operatic Duets by M. Synkova and J. Synek. **5.0**, German Transmission: Richard Wagner Memorial Concert on the Fiftieth Anniversary of his Death. The Station Orchestra, conducted by J. Heidegger. Soloist: Hilde Thim (Songs); Introductory Talk; Funeral March from the Third Symphony (Beethoven); Sieglinde's Narrative from The Valkyries; Brünnhilde's Aria from Siegfried; Overture and Death of Isolda from Tristan and Isolda. **6.0**, See **Prague. 10.0** (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—**10.0 a.m.**, Relay of the Mass on the Occasion of the Feast of Pope Pius XI, from the Church of St. Michel and St. Gudule. **12 Noon**, Concert by Mickey's Club Jazz Attraction. **1.0 p.m.**, Le Journal Parlé. **1.10**, Concert (contd.). **1.30**, Monologues by Mlle. Olga Angn. **1.40**, Concert (contd.). **2.25**, Running Commentary on the Football Match, Belgium v. Italy. **5.0**, Concert, conducted by André Felleman, relayed from the Grand Hotel, Antwerp. In the interval at **5.30**, Football Results. **6.0**, René Demaret in a Programme of his own Works. **6.15**, Saxophone Recital by M. Gason. **6.30**, The Adventures of Bonzo—Sketch (Léon Leroy). **6.50**, Quartet in G Minor, Op. 25 (Brahms). **7.15**, Religious Address. **7.30**, Wireless Notes and Music Review. **8.0**, Le Danseuse de Tanagra, relayed from the Royal French Theatre, Antwerp. **8.35**, Romeo and Juliet Sketch (André Blandin). **8.50**, Second Act of La Danseuse de Tanagra. **9.20**, Jean la Guigne—Comedy in One Act (Jean Mendrot). **9.35**, Humorous Fantasia, Nuit joyeuse (Minssart) on Gramophone Records. **9.40**, Third Act of La Danseuse de Tanagra. **10.20**, Le Journal Parlé. **10.30**, Pianoforte Recital on Gramophone Records: Mazurka, Op. 24, No. 4 (Chopin); Chant polonais (Chopin-Liszt); La plus que lente (Debussy); Mazurka (Delussy). **10.45**, Fourth Act of La Danseuse de Tanagra. **11.20**, Light Music on Gramophone Records. **12 Midnight**, Close Down.

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW. Programme in Flemish. **10.0 a.m.**, See **Brussels, No. 1. 12 Noon**, Concert by the Radio Orchestra, conducted by Franz André: March of the Priests (Mendelssohn); Overture, Fingal's Cave (Mendelssohn); Pieces (Liszt): (a) Hungarian Rhapsody, No. 14, (b) Christus vinet (Gramophone Records), (c) Hungarian Rhapsody No. 2, Overture, Euryanthe (Weber). **1.0 p.m.**, Journal Parlé. **1.10**, Act 1 of La Traviata—Opera (Verdi) on Gramophone Records. **2.25**, See **Brussels No. 1. 5.0**, Rimsky-Korsakov Concert by the Symphony Orchestra: Overture, The Golden Cockerel; Symphonic Suite from the Tale of Czar Sultan. In the interval at **5.15** (approx.), Sports Notes. **5.45**, Programme for Children. **6.30**, Norwegian Rhapsody (Lalo) on Gramophone Records. **6.40**, Dramatic Programme. **7.5**, Gramophone Record: Prelude (Rachmaninov). **7.15**, Talk: The Idea of Eternity in Human Life. **7.30**, Talk on Music. **8.0**, Relay of a Religious Meeting from the St. Rombaut Hall, Malines, under the Presidency of Cardinal Van Roey. Musical Items and Addresses. **9.55**, Evening Prayer. **10.0**, Journal Parlé. **10.10**, Gramophone Concert: L'apprenti sorcier (Dukas); Valse triste (Sibelius); Le chasseur maudit (Franck); Overture, Frasquita (Lehar); Waltz from A Waltz Dream (O. Straus); Selection from Die Fledermaus (Joh. Strauss); Kleiner Marsch (Kreisler). **11.0**, Recital by Willie Lewis of the Penguin Club. **12 Midnight** (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—**5.25 p.m.**, Orchestral Concert. **6.0**, Talk: Romania's Medicinal Herbs. **6.40**, Gramophone Records of Light Music. **7.0**, Time Signal. **7.5**, Orchestral Concert. **7.30**, Talk. **7.45**, Song Recital. **8.5**, Concert (contd.). **8.45**, News.

BUDAPEST

550 metres; 18.5 kW. Also relayed on **840 metres** from **4.30 to 11.0 p.m.**—**8.0 a.m.**, News and Beauty Hints. **9.0**, Mass for the Anniversary of the Pope's Coronation, relayed from the Coronation Church. **10.0**, Divine Service, followed by Concert by the Budapest Concert Orchestra, conducted by Otto Berg. Soloist: Margarete Bokor (Songs). **1.0 p.m.**, Variety Music on Gramophone Records. **2.0**, Agricultural Talk. **2.45**, Broadcast for Schools. **3.30**, News. **3.40** (approx.), Concert by a Cigány Band. **4.30**, Variety Programme from the Academy of Music. **7.0**, Reading. **7.30**, Wagner Concert by the Opera House Orchestra, conducted by Ernst Dohnanyi. Soloists: Ella Nemethy and Franz Szende (Songs). Overture, The Flying Dutchman; Melody from Act 1 of The Flying Dutchman; Prelude and Death of Isolde from Tristan and Isolde; Melody from Lohengrin; Monologue from the Third Act of The Mastersingers; Overture, The Mastersingers. In the Interval at **8.15**, Talk on Richard Wagner, for the Fiftieth Anniversary of his Death. After the Concert, News and Sports Notes, followed by Dance Music and Cigány Music from the Café Ostende.

CASSEL.—See **Frankfurt.**

COPENHAGEN

281 metres; 0.75 kW.; and **KALUNDBORG, 1,153 metres**; 7.5 kW. **11.0 a.m.**, Town Hall Chimes. **11.2**, Instrumental Concert. **12 Noon** Talk in English: A Grand Tour of England. **12.20 p.m.**, Talk in German. **12.40**, Talk in French. **1.0**, Talk: Richard Wagner. **1.30**, Gramophone Records of Variety Music. **1.55**, Programme for Children. **2.25**, Thirteenth Concert from the Axelborg Studio. **4.0**, Divine Service from Christiansborg Castle Church. **5.20**, Talk: The Peasant in Danish Literature—Jacob Knudsen and the Peasants. **5.50**, Weather and News. **6.15**, Time and Sports Notes. **6.30**, Talk: Denmark and her Workers. **7.0**, Town Hall Chimes. **7.2**, Dansen paa Koldinghus—Melodrama (Holger Drachmann, arranged for Radio). Music by Kjerulf. **8.15**, 'Cello Recital by Jens Sörensen: Sonata in G Minor for 'Cello and Pianoforte (Loeillet). **8.30**, Concert by the Comedian Harmonists. **9.30**, News Bulletin. **9.40**, Reading from the Works of P. G. Wodehouse. **10.0**, Dance Music from the National Scala. **11.0** (in an interval), Town Hall Chimes. **11.30** (approx.), Close Down.

CORK.—See **Athlone.**

DANZIG.—See **Heilsberg.**

DRESDEN.—See **Leipzig.**

DUBLIN.—See **Athlone.**

FECAMP

223 metres; 10 kW.—**4.0 to 8.0**, Programme in English by the I.B.C. **4.0**, Military Band Concert: Selection from Iolanthe (Sullivan); Sussex by the Sea (Ward Higgs); Policeman's Holiday (Ewing); Tipperary (Judge Williams); Selection from The Pirates of Penzance (Sullivan); Bells across the Meadows (Ketelbey); Brighton Camp; In a Persian Market (Ketelbey). **4.30**, Vocal and Orchestral Concert: Barcarolle from The Tales of Hoffmann (Offenbach). Songs: (a) Onaway awake beloved (Cowen), (b) Ho Jolly Jenkin (Sullivan), (c) Sinners and Saints (Gechl), (d) Tick Tock, from The Toy-Maker of Nuremberg (Glass), (e) The Toy-Maker's Song from The Toy-Maker of Nuremberg (Glass), (f) A Jovial Monk am I (Audran); The Wayside Shrine (Sherman). **5.0**, Programme for Children. **5.30**, Children's Club Concert. **6.0**, International Broadcasting Club's Concert for Birmingham Listeners, Overture, William Tell (Rossini): Message by the Lord Mayor of Birmingham. Fantasia and Fugue in G Minor (Bach); March, Vimy Ridge (Bidgood); Humoresque, March of the Mannikins (Fletcher); Intermezzo, In a Chinese Temple Garden (Ketelbey); March, Old Comrades (Teike); Fantasia, A Lancashire Ramble (Myddleton). Cornet Solo: Fire Star (Carter). Irish Medley (arr. Somers). Intermezzo, Sanctuary of the Heart (Ketelbey); Second Movement from the Sonata in G; March, Light Cavalry; Marche militaire (Schubert). **7.0**, Orchestral Concert: Old Timers (arr. Hall); Me and the Man in the Moon (Monaco); Amorettentänze (Gung'l); Russian Rhapsody (Nussbaum); Waltz from Der Rosenkavalier (R. Strauss); Musical Comedy Switch (Hall). **7.30**, Light Music: How deep is the Ocean; Dreaming; If you haven't got Love; To-night; Leave the pretty Girls alone; Selection from Nina Rosa (Romberg); Way down in Georgia; Let's put out the Light. **8.0**, Popular Concert. **9.0** till Close Down, Programme in English by the I.B.C. **9.0**, Concert of Light Music on Behalf of Hospitals Trust, Ltd.: Selection from The Student Prince (Romberg); Irish National March (Brase); Xylophone Solo: Carnival of Venice (arr. Easton); Song: River stay 'way from my Door (Dixon Woods); Harp Solo: Irish Melodies; Grand March from Aida (Verdi). **9.30** Concert: Selection from The Belle of New York (Kerker); Soprano Song: Love will find a way, from The Maid of the Mountains (Fraser-

Simpson); Prologue to I Pagliacci (Leoncavallo); Rustle of Spring (Sinding); Baritone Song: Annie Laurie; Selection from Faust (Gounod). 10.0, Songs: Only for you; Mammy is gone; My Song of the Nile; Just keepin' on; Since you went away; A Banjo Song; Lonesome Moonlight; Wild de Moon, Moon, Moon. 10.20, Henly Concert of Dance Music; Look who's here; Thompson's Old Grey Mule; Just a little Street where Old Friends Meet; It's winter again; Just an Echo in the Valley; Leave the pretty Girls alone; I don't want to go to Bed; How deep is the Ocean. 11.0, Orchestral Concert: Selection from Chu Chin Chow (Norton); Gipsy Moon (Eyton); Waltz Medley from Bitter Sweet (Noel Coward); Moment musicale (Schubert); The Moon and I, from The Mikado (Sullivan); From the Canebrake (Gardner); Valeucia (Padilla). 11.30, Banjo Solos: March, Rugby Parade (Oakley); A Desert Breeze (Earle); Tattoo March (Earnshaw); A Banjo Vamp (Grimshaw); Heather Bloom (Kirby); Wedding of the Painted Doll (Brown); Riverside (Kirby); Popular Medley. 12 Midnight, Songs: Cryin' for the Carolines; Gipsy Melody; Wasn't it nice?; Say a little Prayer for me; My Heart is where the Mowhawk flows; Wandering Days; When you wore a Gingham Gown; Would you take me back again. 12.30 a.m. (Monday), Variety: Let's all have a Sing-song; The Dutchman's Return; Is Izzy azzy wozz?; Slippery Sam the Stoker; Sketch, A Music Hall Show; In Grandpa's Day; The Jilted Dutchman; Twenty Thousand Scotsmen. 1.0, Concert by an Accordion Band; Señorita Tango; Javanette; Volante March; The Waltz that made you mine; 'Leven Pounds of Heaven; Bertina Waltz; After the Ball; Lullaby of the Leaves. 1.30, Vocal Duets: I'm just wearing out my Heart for you; Make yourself a Happiness Pie; Pasadena Rose; The Waltz you saved for me; The Medley of the Three Blind Mice; When your Lover has gone; It's an old Spanish Custom. 2.0, Dance Music. 2.57, I.B.C. Good-night Melody. 3.0 (approx.), Close down.

FLENSBURG.—See **Hamburg.**

FLORENCE.—See **Turin.**

FRANKFURT

259 metres; 17 kW.; and **CASSEL, 245.9 metres.**—**10.30 a.m.,** See **Leipzig. 12 Noon,** Gramophone Concert of Light Music. **1.0 p.m.,** Agricultural Talk. **1.10,** Radio Report from a Dairy Farm in the Taunus. **2.0,** See Vienna. **3.10,** See **Berlin (Witzleben). 3.50,** Programme for Young People. **4.30,** Concert of Light Music on Gramophone Records. **5.0,** Dialogue: A Cruise in a Ship round Africa. **5.25,** A Pleasant Interlude. **5.55,** Talk: European Thinkers—Hans Driesch. **6.20,** Sports Notes. **6.40,** Reading from the Norwegian Masters: A Tale of Ski-ing (Casimi Edschmid). **7.0,** See **Munich. 7.45,** Eighth Sunday Concert relayed from the Saalbau. The Frankfurt Wireless Symphony Orchestra, conducted by Hans Rosbaud. Soloist: Erica Morini (Violin); Symphonic Triology on the Cantata, Von deutscher Seele (Pfitzner); Concerto for Violin in A Minor, Op. 82 (Glazunov); Symphonic Poem, Mazeppa (Liszt). **9.0,** Time, News, Weather, and Sports Notes. **9.30,** See **Stuttgart. 11.0** (approx.), Close Down.

FREDRIKSSTAD.—See **Oslo.**

FREIBURG.—See **Stuttgart.**

GENEVA.—See **Radio-Suisse Romande.**

GENOA.—See **Turin.**

GLEIWITZ.—See **Breslau.**

GOTEBORG.—See **Stockholm.**

GRAZ.—See **Vienna.**

HAMAR.—See **Oslo.**

HAMBURG

Call ha (in Morse), **372 metres;** 1.5 kW. Relayed by **Bremen, 269.8 metres; Flensburg, 227.4 metres; Hanover, 566 metres;** and **Kiel, 232.2 metres.**—**10.30 a.m.,** See **Leipzig. 12** Noon, Time and Weather. **12.5 p.m.** (from **Flensburg**), Concert from the Deutsches Haus. **1.0,** Talk: Tales from the Vienna Woods. **1.30,** Radio Report from **Breslau. 2.0,** Musical and Literary Programme from Children. **2.45,** The Hamburg Musical Play, Two Hundred Years Ago—Concert by the Station Choir, Orchestra, and Soloists, with Introductory Talk. **3.45** (from **Kiel**), Concert by the St. Nicholas Choir on its Tenth Anniversary. **4.30** (from **Hanover**), The Versailles of 1648—A Play about the Peace of Westphalia (Ludwig Bate), relayed from the Osnabruck Town Hall. **5.30,** Humorous Programme. **6.30** (from **Kiel**), Talk by Dr. Peltzer: My Experiences as a Sportsman Abroad. **6.40,** Sports Notes. **6.55,** Weather Report. **7.0,** See **Munich. 7.50,** First General News. **8.0,** Brahms-Schubert Concert by the Philharmonic Orchestra, conducted by Richard Richter, and a Women's Choir. Soloist: Josef Degler (Songs). Songs for Women's Choir, with Accompaniment for two Horns and Harp (Brahms): (a) Es tönt ein voller Harfenklang, (b) A Shakespeare Song, (c) Der Gärtner, (d) Song from Fingal. The Fifth Symphony in B flat (Schubert); Four Songs (Schubert): (a) Fischerweise, (b) Wiedersehen, (c) Wohin, (d) Im Abendort; Ave Maria (Schubert); Ballet Music from Rosamund (Schubert); March in B Minor (Schubert). **9.0,** News Bulletin. **9.10,** Topical Talk. **9.20,** Dance Music from **Berlin (Witzleben).**

HANOVER.—See **Hamburg.**

FEB. 12th **SUNDAY** ***continued***

HEILSBERG

276.5 metres; 60 kW.; and **DANZIG, 453.2 metres.**—**10.30 a.m.,** See **Leipzig. 12.5 p.m.,** Concert, conducted by Hugo Hartung: Serenade, Op. 85 (Juon); Concerto, Op. 79, for Viola da Gamba and Orchestra (Herrmann); Symphony in D Minor (Haydn). **1.0,** See **Breslau. 2.0,** Programme for Children. **3.0,** Concert of Request Music by the Small Station Orchestra, conducted by Eugen Wilcken. In the interval, Racing Results. **5.0,** Reading. **5.30,** Reading: Germans in the Tropics. **6.0,** Concert of Sacred Music from the Sackheimer Kirche, Königsberg: Toccata and Fugue in D Minor for Organ (Bach); Three Songs for A-cappella Choir: (a) Missa brevis (Lotti), (b) Adoramus te Christe (Corsi), (c) Miserere (Lassus); Prelude and Fugue in G Minor for Organ (Frescobaldi). **6.30,** Sports Results. **6.40,** Poetry Reading: Hymnen an Deutschland (Gertrud von la Fort). **7.0,** See **Munich. 7.50,** Recital of Sacred Folk Songs Tony Jaeckel (Soprano and Lute), Kees Veeding (Baritone) and Gerhard Rüchel (Violin). **8.15,** Don Juan—Play (after an old German Marionette Play) Arranged for the Radio by Werner Egk. **9.15,** News and Sports Results. **9.20** (approx.), Dance Music from **Berlin (Witzleben). 11.0** (approx.), Close Down.

HILVERSUM

Announced **HUIZEN, 296.1 metres;** 20 kW. (7 kW. up to **4.40 p.m.**).—**9.40 a.m. to 4.40 p.m.,** Programme of the Catholic Radio Society (K.R.O.). **9.40,** High Mass, relayed from the Johan van Viarnevkerk, Deventer. **11.10,** Gramophone Records. **11.40,** Talk. **11.55,** Concert by the K.R.O. Boys, conducted by P. Lustenhouwer; Soloist, H. Weissbach (Songs). **12.40 p.m.,** Literary Talk. **1.0,** Concert (contd.). **2.10,** Concert by the K.R.O. Orchestra, conducted by M. v.'t Wout. **2.50,** Variety Music on Gramophone Records. **3.10,** Concert (contd.). **3.40,** Programme for Invalids. **4.40 to 7.25,** Programme of the Christian Radio Society (N.C.R.V.). **4.40,** Sacred Music on Gramophone Records. **5.0,** Missionary Service, relayed from a Church in Goes. **7.10,** Sacred Music on Gramophone Records. **7.25** till Close Down, K.R.O. Programme. **7.25,** Talk. **7.45,** Football Results. **7.50,** Concert by the K.R.O. Orchestra, conducted by J. Gerritsen: Prelude from Tiefland (d'Albert); Suite algérienne (Saint-Saëns); Waltz and Selection from Der Rosenkavalier (R. Strauss). **8.40,** News Bulletin. **8.55,** Concert (contd.): Overture, Fra Diavolo (Auber); Concert Waltz, Op. 47 (Glazunov); Irish Melody from County Derry (Grainger); Prelude (Järnefelt). **9.10,** Agricultural Talk. **9.30,** Concert (contd.): Selection from Comtess Maritza (Kálmán); Overture, La Roi Yvetot (Adam); Andalouse (Popy); Barcarolle from The Tales of Hoffmann (Offenbach); El Capitan (Sousa). In the interval at **9.55,** News. **10.20,** Epilogue. **10.40** (approx.), Close Down.

HORBY.—See **Stockholm.**

HUIZEN

Announced **HILVERSUM, 1,875 metres;** 8.5 kW.—**11.40 a.m. to 4.40 p.m.,** Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.). **11.40,** Time Signal. **11.41,** Concert by the Wireless Orchestra, conducted by Nico Treep. **1.40,** Weekly Book Talk. **2.10,** Concert by Hans Bund and his Orchestra; Soloists: Irene Ambrus and Luigi Bernauer (Songs). **3.40,** Two Scenes from Dear Brutus—Play (James Barrie), with Introductory Talk. **4.25,** Variety Music on Gramophone Records and Sports Notes. **4.40,** Programme of the Workers' Radio Society (V.A.R.A.): Programme for Children. **5.40 to 7.40,** Programme of the Liberal Protestant Radio Society (V.P.R.O.). **5.40,** Literary Talk. **6.25,** Divine Service from a Church at Beverwijk. **7.40** till Close Down, A.V.R.O. Programme. **7.40,** Time, Weather, and News. **7.55,** Concert by the Wireless Orchestra, conducted by Albert van Raalte; Soloist: Hermann Schey (Baritone): Overture, The Water Carrier (Cherubini); Songs from Czar and Carpenter (Lortzing); Symphony No. 35 (Mozart); Songs: (a) Serenade from Don Giovanni (Mozart), (b), (c) and (d) Arias from Figaro (Mozart); Waltz from the Serenade for Strings, Op. 48 (Tchaikovsky); Songs: (a) Aria from Rigoletto (Verdi), (b) Even the bravest Heart may swell, from Faust (Gounod); Ballet égyptien (Luigini). **9.20,** Recitations by Felix Timmermans. **9.40,** Concert of Light Music by Kovacs Lajos and his Orchestra; Soloist: Bob Scholte (Songs). **10.40,** Popular Music on Gramophone Records. **11.40** (approx.), Close Down.

INNSBRUCK.—See **Vienna.**

KALUNDBORG.—See **Copenhagen.**

KIEL.—See **Hamburg.**

KLAGENFURT.—See **Vienna.**

KOSICE.—See **Prague.**

LANGENBERG

473 metres; 60 kW.—**11.0 a.m.,** See **Leipzig. 12 Noon,** Concert, conducted by Wolf. Overture, Lysistrata (Lincke); Selection from Der Wildschütz (Lortzing); A Wedding Day on Troldhaugen (Grieg); Suite, Carnival (Schmaistich); Waltz, Mondnacht auf der Alster (Fetras); Im wogenden Aehrenfeld (Dransmann); Murmelndes Lüftchen (Jensen); Potpourri, Ein Sängerfahrt nach Wien (Silving). **1.0 p.m.,** Talk on Music. **1.20,** Shorthand Lesson. **1.40,** Review of New Historical Novels. **2.0,** See **Vienna. 3.10,** Programme from **Berlin (Witzleben). 4.0,** Lohengrin—Opera in Three Acts (Wagner). **5.10,** Masters of their Craft—Gramophone Records. **5.30,** Lohengrin (Second Act). **7.0,** See **Munich. 7.45,** Sports Notes. **8.0,** Lohengrin—Third Act. **9.5,** News and Sports Notes. **9.45** (approx.), See **Munich. 11.0** (approx.), Close Down.

LAUSANNE.—See **Radio-Suisse Romande.**

LEIPZIG

389.6 metres; 120 kW.; and **DRESDEN, 319 metres.**—**10.30 a.m.,** Nimm, was Dein ist und gehe hin—Cantata (Bach) by the Leipzig Symphony Orchestra, the Choir of St. Thomas' and Soloists. **11.0,** Wagner Memorial Concert by the Municipal and Gewandhaus Orchestras, relayed from the Gewandhaus; Conductor: Dr. Karl Muck: Prelude to Parsifal; Address by Dr. Gordeler; Address by Dr. Max von Schillings; Prelude to The Mastersingers. **12 Noon,** Music of Four Centuries—Concert by the Munich Violin Quintet: Fantasia in C Minor (Bach); Chanson (Sweelinck); Kyrie (Dufay); Canzone (Monteverdi); Canzone (Merulo); Two first Fugues from The Art of the Fugue (Bach); Old English Dances; Four Pieces (Henry Purcell): (a) Fantasia on a Note, (b) Trumpet Air, (c) Air, (d) Hornpipe. **1.0 p.m.,** Weather and Time. **1.5,** Programme Announcements. **1.25,** Agricultural Hints. **1.35,** Esperanto Lesson. **2.0,** Zither Recital by Paul Renk and Hugo Bräunlich: Tone Pacin, Op. 110d (Haustein); Unter des Dorfes Lindenbaum (Pugh). **2.30,** Reading from the Letters of German Mystics. **3.0,** Concert by the Leipzig Symphony Orchestra. **4.0,** Der Erbförster — Play (Otto Ludwig), arranged for the Radio by Albert Willi. **5.0,** Rudolf Philipp Concert by the Leipzig Symphony Orchestra, conducted by Theodor Blumer: Introduction and March, Intermezzo and Mirror Dance from the Ballet Suite, Elvira; Four Pieces for Pianoforte with Orchestral Accompaniment: (a) Melancholie, (b) Scherzo capriccioso, (c) Humoresque, (d) Valse Brillante; Skareshrick Gavotte in D. **5.50,** English Sea Chanties—Talk, with Gramophone Illustrations. **6.10,** Reports on Gramophone Records: (a) Tobogganning at Ilmenau, (b) The International Bob-sleigh Championship from Breslau, (c) The International Ski Championships from Vienna. **7.0,** See **Munich. 7.45,** Wagner Concert from **Munich. 9.5,** News Bulletin. **9.15** (approx.), Concert by the Dresden Soloists' Ensemble: Soirée de Vienne (Schubert); Ballet Music from Les petits riens (Mozart); Hindu Song from Sadko (Rimsky-Korsakov); Suite from Le fils perdu (Wormser); Spanish Dance, Op. 26, No. 8 (Sarasate); Prayer and Tempie Dance from Olav Trygvason (Grieg); Cradle Song (Sitt); Fourth Movement from the Divertimento, Op. 67 (Graener); Finlandia, Op. 26, No. 7 (Sibelius); Entr'acte Music and Hymn from Stimmungsbilder, Op. 57 (Fielitz). **11.0** (approx.), Close Down.

LINZ.—See **Vienna.**

LWOW

381 metres; 16 kW.—**6.5 p.m.,** Miscellaneous Items. **6.25,** See **Warsaw. 7.0,** Concert of Light Music by M. Wiktor Budzynski and M. Adam Epler. **8.0** till Close Down, See **Warsaw. 11.0** (approx.), Close Down.

MADRID

ARANJUEZ (EAQ), 30.43 metres; 20 kW.—**10.30 p.m.,** Variety Concert. **10.45,** Humorous Talk. **11.0,** El ruisenor de la huerta—Musical Comedy (Sanchez Prieto and Magenti). **11.35,** Talk. **11.40,** Light Music. **12 Midnight** (approx.), Close Down.

MADRID

UNION RADIO; Call EAJ7; 424.3 metres; 2 kW.—**8.0 to 9.0 a.m.,** Topical Review. **2.0 p.m.,** Chimes, Time Signal, Theatre Notes and Concert by the Artys Orchestra. **4.0 to 7.0,** Interval. **7.0,** Chimes and Dance Music, relayed from the Ritz Hotel. **7.30** (in an interval), Agricultural Talk. **8.30 to 9.30,** Interval. **9.30,** Chimes and Time Signal. **9.35** (approx.), Pianoforte Recital by Gloria de Loizaza, an Interlude by Ramon Gomez de la Serna and Songs by Jose Calvo de Rojas (Tenor). **12 Midnight,** Chimes and Close Down.

MALMO.—See **Stockholm.**

MILAN.—See **Turin.**

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—**11.5 a.m.,** Concert by the Station Orchestra, conducted by J. Plichta. **12.30 p.m.,** See **Prague. 3.0,** See **Bratislava. 4.30,** See **Prague. 10.0** (approx.), Close Down.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—**4.0 p.m.,** Press Review. **4.10,** News. **4.30,** Concert. **5.30,** Concert of Light Music, relayed from the Radio Theatre. **8.0,** Talk in English: Lenin's Views on the Doctrines of Marx. **8.55,** Time Signal. **9.5,** Press Review.

MOTALA.—See **Stockholm.**

MUHLACKER.—See **Stuttgart.**

MUNICH

533 metres; 60 kW. Relayed by **Augsburg** and **Kaiserslautern, 560 metres;** and **Nürnberg, 239 metres.**—**9.0 a.m.,** Concert of Chamber Music. **9.45,** Chimes from Our Lady's Church. **10.5,** Concert by the Boys' Choir of Regensburg Cathedral, the Station Male Voice Choir, and the Station Orchestra. **11.0,** See **Leipzig. 12.5 p.m.,** Time, Weather, and Programme Announcements. **12.15,** Agricultural Talk. **12.35,** Talk, with Gramophone Records: A Little Trip through the U.S.A. **1.30** Chess Lesson. **2.15,** The Cosy Corner. **3.10** See **Berlin (Witzleben). 3.50,** Pianoforte Recital of Scandinavian Music. **4.20,** Talk: Names of Mountains. **4.40,** Orchestral Concert, conducted by Erich Kloss. Carnival Overture (Leuschner); Dance Scene from Scheherazade (Rimsky-Korsakov); Selection from Il Trovatore (Verdi); Dance Violette (Gillet); Carnaval (Gillet); Potpourri Musikalische Neckereien (Worch); Mein Herz (Platen); Sérénade ambulante (Micheli); Topical Talk in the interval. **6.0** Report on the International Ski-ing Championships in Innsbruck (on Gramophone Records), followed by Weather and Sports Notes. **6.35,** Talk: Wagner's House, Wahnfried—the Significance of its Name. **7.0** Genius dwelt Here—Wagner Memorial Programme relayed from the Composer's House Wahnfried, Bayreuth. **7.50,** Wagner Memorial Concert by the Munich Philharmonic Orchestra, conducted by Willy Haenel-Christiansen, relayed from the Tonhalle. Soloists: Sabine Offermann (Soprano), Fritz Müller-Ravon (Tenor), and Carl Snoeck (Violin). Prelude to Lohengrin. Soprano Solos: (a) Elizabeth's Prayer, from Tannhäuser, (b) Senta's Ballad from The Flying Dutchman. Two Pieces for Violin and Orchestra: (a) Träume, (b) Albumblatt. Walter's Prize Song from The Mastersingers. Overture, Rienzi. **9.20,** Time, Weather, News, and Sports Notes. **9.45,** Serenade conducted by Erich Kloss. **11.0** (approx.), Close Down.

NAPLES.—See **Rome.**

NOTODDEN.—See **Oslo.**

OSLO

1,083 metres; 60 kW. Relayed by **Fredrikstad, 365.8 metres; Hamar, 574.7 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres;** and **Rjukan, 447.1 metres.**—**9.20 a.m.,** Chimes. **9.30,** Divine Service from the Fagerborg Church. **4.0 p.m.** (from **Fredrikasstad**), Kristian Wendelborg Concert on his Seventieth Birthday. **5.30,** Talk: The Success of Educational Films. **6.0,** Parliamentary Review. **6.15,** Weather and News. **6.30,** Trio for Pianoforte, Violin and 'Cello (Schubert). **7.0,** Time Signal. **7.1,** Talk by Oscar Braaten: Reminiscences of my Youth. **7.30,** Concert by the Station Orchestra, conducted by Hugo Kramm: Overture, Mignon (Thomas); Ballet Music of the time of Louis XIV (Rouget); Selection from Samson and Delilah (Saint-Saëns); Petite Suite (Debussy); Bolero (Ravel); Selection from La Roi Pausole (Honneger). **8.40,** Weather and News. **9.0,** Topical Talk. **9.15,** Song Recital by Magnus Samuelson, relayed from **Stavanger (240.6 metres). 9.45,** Popular Music on Gramophone Records. **11.0** (approx.), Close Down.

OSTERSUND.—See **Stockholm.**

PALERMO

537.6 metres; 3 kW.—**9.25 a.m.,** Religious Programme. **9.40,** Sacred Music. **10.5,** Talk. **11.45,** Giornale radio. **12 Noon to 1 p.m.,** Concert from the Olympia Tea Rooms. In the interval at **12.30,** Time, Announcements and Weather. **1.30,** See **Turin. 4.30 to 5.30,** Light Music from the Olympia Tea Rooms. **7.0,** Announcements and Giornale Radio. **7.20,** Sports Notes. **7.30,** Time and Announcements. **7.45,** Symphony Concert on Gramophone Records. **9.0,** Songs and Variety Music; Talk in the interval. **9.55,** News Bulletin.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW.—Time Signals (on **2,650 metres**) at **9.26 a.m.** and **10.26 p.m.** (Preliminary and 6-dot Signals). **12.30 p.m.,** Concert relayed from **Paris (Ecole Superieure) (447.1 metres). 1.0,** Concert by the Rex Orchestra. **5.45,** Le Journal Parlé. **6.45,** Programme for Children. **7.20,** Weather Report. **7.30,** Gramophone Concert: Selection from Hérodiade (Massenet); Pensée d'automne (Massenet); Melody from Pamrge (Massenet); Selection from Les Dragons de Villars (Maillart); Les Remords de Colombine (Dumas); Vision d'Orient (Dumas); Balletto (Martini); Selection from The Desert Song (Romberg); La Pénitence (Chenal); Piece (Guerreto). **9.0** (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—**9.45 a.m.,** Bible Reading. **10.0,** News. **10.5,** Sponsored Concert. **11.5,** Film Stars—Sponsored Programme. **11.40,** Sponsored Gramophone Concert. **12.15 p.m.,** Sponsored Concert. **12.45,** Half-an-Hour of Fantasy by Paul Weill. **1.15,** Interval. **1.30,** Sponsored

Programme. 2.0 to 6.45, Interval. 6.45, Le Journal Parlé. 7.0, Sports Notes. 7.15, Catholic Review. 7.30, Organ Recital. 8.0, Sponsored Concert. 8.30, Interval. 8.45, Sponsored Concert. 10.0, Popular Music on Gramophone Records. 10.30, News.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW. **7.45 a.m.,** Light Music on Gramophone Records. **8.0,** Press Review and Weather. **8.30,** Physical Culture. **10.0,** Elementary Book-keeping Lesson. **10.20,** Advanced Book-keeping Lesson. **10.40,** Spanish Lesson. **11.0 to 11.30,** Interval. **11.30 to 12 Noon,** Programme in English by the I.B.C. Songs from the Shows, Part I, by the Embassy Musical Comedy Company, with Orchestra and Compère, Wheezy Anna, by Leslie Sarony; Sweethearts of Yesterday, Part I, by Reginald New on the latest Compton Cinema Organ; A Boy and a Girl were dancing, by Morton Downey (Tenor); Just an Echo in the Valley, by Jack Payne and his Band, with Vocal Chorus by Jack Payne; Bells across the Meadow, with Genuine Bird Singing by a Choir of Canaries with Orchestral Accompaniment, presented by Musical Dawson; In a Shanty in Old Shanty Town, by Roy Smeck and his Vita Trio; Hits from a Hit Film, The Big Broadcast, Part I, by Ned Fox's Film Fans, with Vocal Refrains. **12 Noon,** Religious Address by the Reverend Father Padé. **12.20 p.m.,** Sacred Music. **12.30,** Bilbonquet. **12.45,** Press Review, News and Weather. **1.0,** Orchestral Concert. **1.30 to 3.30,** Programme in English by the I.B.C. **1.30,** Gramophone Concert: Sweet Rhythm, by Cab Calloway and his Orchestra; Marita, by Bobby Brown and his Accordion Band; Crazy People, by the Boswell Sisters; I'll follow you, by Sam Browne; Tiger Rag, by the Mills Brothers; Puss, Puss, by Maurice Winnick and his Orchestra; Fit as a Fiddle, by Annette Hanshaw, Just an Echo in the Valley, by Will Osborne and his Orchestra. **2.0,** Gramophone Concert. Standing in the Corner, by Jack Hylton and his Orchestra; Die miri Bolkuti Spiriti, by Sydney Rayner (Tenor); Till to-morrow, by Nick Lucas the Crooning Troubadour; Blue Moon in the Sky, by Roy Fox and his Band; Here lies Love, by Bing Crosby; I'm sure of everything but you, by Guy Lombardo and his Royal Canadians; Absent, by Alfred Piccaver; A little Street where Old Friends meet, by Gene Austin; I want to go Home, by the Street Singers; I may never pass your way again, by Eddy Duchin and his Central Park Casino Orchestra; Waltz, Wiener Bonbons, by Marek Weber and his Orchestra; Little Nell, by Lew Stone and the Monseigneur Band; Songs from the Shows, Part I, by Anona Winn and Reginald Purdell; Well! Well! Well! by Benn Bernie and his Orchestra; Pale Voiga Moon, by Alfredo Campoli and his Salon Orchestra; Come Gipsy, from Countess Maritza (Kilmin) by Lily Gyenes and her Twenty Hungaria Gipsy Girls. **3.0,** Clarke's All's Concert of Light Music, by Fred Adison and his Band. How are you?; Let's put out the Lights; Selection from White Horse Inn; Un soir du Réveillon; Paradise; Marching along. **3.30,** Popular Concert. **4.0 to 5.0,** Programme in English by the I.B.C. Tea Time Variety Hour. Mr. S. H. C. Williams announcing. **5.0,** Orchestral Concert. **6.30,** Variety Concert. **7.0 to 8.0,** Programme in English by the I.B.C. Film Fans' Hour. Mr. S. H. C. Williams announcing. **8.0,** Radio Paris Circus. **8.30,** News, Sports Notes and Weather. **8.45,** Song Evening arranged by Georges Chepfer. In the interval at **9.15,** Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW. Relayed by **W8XK on 48.86 metres** and **25.27 metres.—9.0 p.m.,** Temple of Song from New York. **9.30,** Vesper Services from Shadyside Presbyterian Church. **10.30,** Pages of Romance, from New York. **11.0,** Sealed Power, from New York. **11.30,** Time Signal. **11.31,** Weather Report. **11.32,** Teaberry Sport Review. **11.37,** Press News Reeler. **11.42,** Strange Facts. **11.44,** Temperature Report. **11.45,** Programme to be announced. **12 Midnight,** Time Signal and Westinghouse Concert. **12.30 to 3.45 a.m. (Monday),** New York Relay. **12.30,** Great Moments in History. **1.0,** Russian Gaieties. **1.30,** Mexican Symphonic Marimba Orchestra. **2.0,** Twenty Thousand Years in Sing Sing. **2.30,** Walter Winchell. **2.45,** Jubilo—Singer of the Lonesome Road. **3.0,** D. W. Griffith's Hollywood. **3.15,** Real Silk. **3.45,** Programme to be announced. **4.0,** Time Signal. **4.1,** Teaberry Sport Review. **4.11,** Temperature Report. **4.12,** Weather Report. **4.15,** Press Last Minute News. **4.20,** Alexander Roy (Tenor). **4.30,** Jesse Crawford (Organist) from New York. **5.0,** Time Signal and Good-night.

PORSGRUND.—See **Oslo.**

PRAGUE

488.6 metres; 120 kW. **10.0 a.m.,** Concert by the Ondricek Quartet. **11.9,** Chimes. **11.5,** See **Moravská - Ostrava. 12.30 p.m.,** Humorous Programme. **1.0,** Agricultural Talk. **1.15 to 1.25,** Talk. **3.0,** See **Bratislava. 4.30,** Talk: The Island of Ceylon. **4.45,** Variety Music on Gramophone Records. **5.0,** German Transmission: Wagner Memorial Programme; Talk; Five Songs by Lydia Kindermann and Recitations. News in the interval. **6.0,** Old Czech Dance Music. **7.0,** Talk on the following Transmission. **7.5,** Wagner Concert on the Fiftieth Anniversary of his Death, relayed from the Smetana Hall. The Czech Philharmonic Orchestra and the Hlahol Choral Society, conducted by Alexander Zemlinsky; Soloists: Marta Krasova (Contralto), Otto Masak (Tenor), and Josef Schwarz (Baritone); Eine Faust Ouvertüre; Five Contralto Songs; Siegfried Idyll; Overture and Death of Isolda from Tristan and Isolda; Overture, The Mastersingers; Baritone Solo; Hans Sachs' Monologue from The Mastersingers; Finale for Baritone, Tenor and Choir from The Mastersingers. In the interval at **8.0,** Time Signal. **9.0,** Time Signal. **9.1,** News Bulletin. **9.20,** Jazz Music on Two Pianofortes by Erwin Schulhoff and Dr. Leftus. In the intervals and after the Programme, Variety Music on Gramophone Records. **10.0** (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres, 25 kW.; **LAUSANNE, 680 metres;** and **GENEVA, 760 metres.—8.55 a.m.** (from **Geneva**), Chimes. **9.0** (from **Geneva**), Protestant Service. **10.0** (from **Lausanne**), Concert by Edouard Moser and his Orchestra. **11.0** (from **Lausanne**), Readings. **11.30,** News and Weather. **11.40** (from **Lausanne**), Popular Music on Gramophone Records. **1.0 to 3.0,** Interval. **3.0,** Symphony Concert by the Orchestra of the Paris Conservatoire, relayed from **Paris;** Soloist, M. Francescatti (Violin); Symphony (Saint-Saëns); Concerto for Violin and Orchestra (Beethoven); Siegfried Idyll (Wagner); Overture, Euryanthe (Weber). **5.30** (from **Lausanne**), Protestant Address. **6.0** (from **Lausanne**), Pianoforte Recital. **6.15** (from **Geneva**), Sports Notes, News, and Announcements. **6.30,** Negro Spirituals, relayed from **New York. 7.0** (from **Lausanne**), Song and Pianoforte Recital. **7.50,** Concert by the Station Orchestra. **9.0,** News Bulletin and Weather Forecast. **9.15** (approx.), Close Down.

RJUKAN.—See **Oslo.**

ROME

Call 1RO, 441 metres; 50 kW. Relayed by **Naples, 319 metres,** and **2RO, 25.4 metres.—9.10 a.m.,** News, Sports Notes, and Amusement Guide. **9.30,** Agricultural Report. **9.45,** Bible Reading. **10.10,** See **Turin. 11.30 to 12.30 p.m.,** See **Turin.** In the interval at **12 Noon,** Time and Announcements. **12.30 to 1.30,** Orchestral Concert. **2.45** (Naples), Programme for Children, followed by Weather and Sports Notes. **3.9,** Football Report. **3.15 to 5.30,** Orchestral and Vocal Concert. Sports Notes in the interval. **6.30,** Football and Other Sports Notes, Announcements, and News. **7.3,** Time and Announcements. **7.30,** Sports Notes. **7.45,** La donna perduta—Operetta in Three Acts (Piebri). In the intervals, Talk: Reading of Modern Italian Poetry. News after the Operetta.

SALZBURG.—See **Vienna.**

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 379.5 metres; 50 kW. Relayed at intervals by **W2XAF** on **31.48 metres,** and by **W2XAD** on **19.56 metres.—7.0 p.m. to 2.30 a.m. (Monday),** New York Relay. **7.0 p.m.,** Musical Programme. **7.15,** Clyde Doerr's Saxophone Octet. **7.30,** Moonshine and Honeysuckle. **8.0,** Wayne King's Orchestra. **8.30,** Hour of Worship. **12 Midnight,** Harmonica Rascals. **12.15 a.m. (Monday),** Wheatena Ville. **12.30,** Pickens Sisters. **12.45,** Smith Brothers Programme. **1.0,** Chase and Sanborn Hour. **2.0,** General Electric Sunday Circle Concerts. **2.30,** American Album of Familiar Music and Programme Resumé.

SCHWEIZERISCHER LANDESSENDER

BEROMUNSTER, 459 metres; 60 kW.; **BASLE, 244.1 metres;** and **BERNE, 245.9 metres.—8.45 a.m.** (from **Basle**), Protestant Service. **9.35** (from **Zurich**), Wagner Concert, relayed by the Zürich Municipal Theatre. **11.0,** Concert by the Radio Orchestra. **11.28,** Time and Weather. **11.30,** News Bulletin. **11.40,** Concert by the Radio Orchestra. **12.30 p.m.** (from **Basle**), Holigant—Musical Play, with Songs by the Langnau Yodelling Club. **1.30 to 2.30,** Interval. **2.30** (from **Basle**), Talk: With the Microphone in the Steppes, in the Arctic, and in Mexico. **3.0,** Relay from the Conservatoire, **Paris;** Soloist: François Scatti (Violin). **4.45 to 5.30,** Interval. **5.30** (from **Basle**), Talk: The Work of French Missions—Catholic, Protestant, and Lay. **6.0,** Time, Weather, and Sports Notes. **6.5** (from **Basle**), Talk: Miracles and Piety. **6.30,** American Negro Music, relayed from **New York. 7.0** (from **Basle**), Hermann Wetzler Song Recital by Erika Krauscher (Soprano), the Composer at the Pianoforte. **8.0** (from **Basle**), Recitations. **8.30,** Weather and News. **8.40,** Concert by the Radio Orchestra. **9.15,** Sports Notes. **9.25** (approx.), Close Down.

SOTTENS.—See **Radio-Suisse Romande.**

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by **Boden, 1,229.5 metres; Göteborg, 322 metres;**

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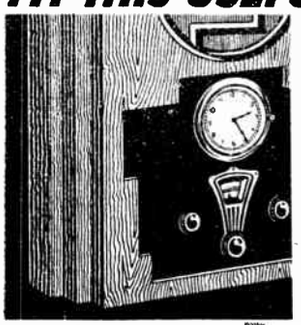

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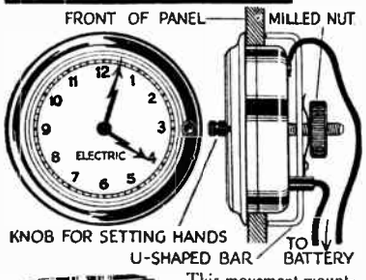

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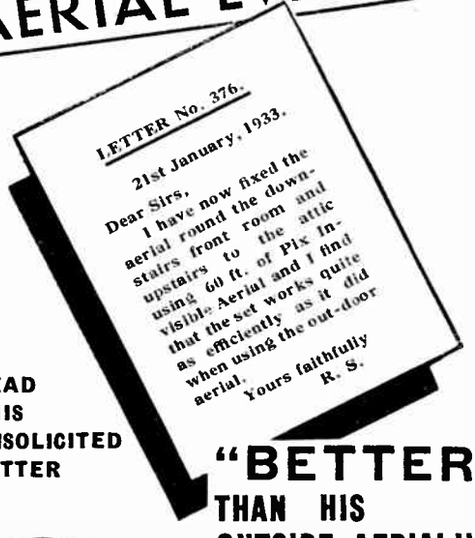
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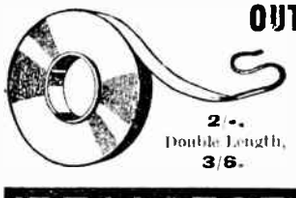

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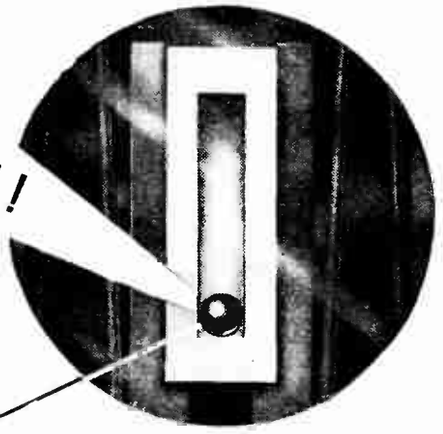

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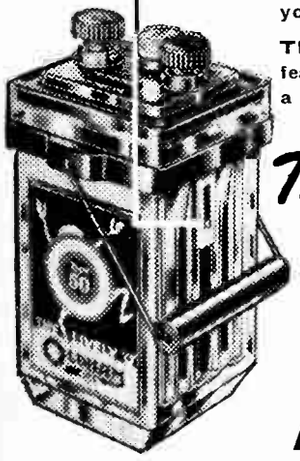

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FEB. 12th SUNDAY continued

Horby, 257 metres; Motala, 1,348 metres; Ostersund, 770 metres; and **Sundsvall, 542 metres.**—**10.0 a.m.** Divine Service Relay. **11.45,** Weather and Ice Report. **2.0 p.m. (from Goteborg),** Talk in German: The Wagner Festival at Bayreuth. **2.20,** Song and Pianoforte Recital, relayed from **Orebro, 237.2 metres. 3.0,** Programme for Children. **3.30,** Popular Music on Gramophone Records. **4.30,** Talk: Among Bandits in China. **5.0,** Evensong. **6.15,** Weather and News. **6.30,** Song Quartet, Kerstin Lindberg-Toulind, Edit Widmark Lundblad, Sten Hermelin, and Pehr Danielsson. Songs (Haydn): (a) Die Beredsamkeit, (b) Der Augenblick; Shepherds' Chorus from Rosamund (Schubert); Ave maris stella (Klametti); Songs (Debussy): (a) Yver, vous n'estes qu'un villain, (b) Dieu! qu'il la fait bon regarder; Madrigal (Fauré). **7.0,** Selma Lagerlöf speaks to America. **7.15,** Orchestral Concert. **Soloist:** Ivar Kåge (Recitations). **8.45,** Weather and News. **9.0.** Concert of Light Orchestral Music. **10.0** (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW. **9.30 a.m.,** Orchestral Concert, conducted by Maurice de Villiers. **10.45,** Protestant Service in German. **11.30,** Catholic Service in French. **12 Noon,** Gramophone Concert of Classical Music. **12.45,** News. **1.0,** Time. **1.1,** Gramophone Concert of Light Music. **1.45,** Agricultural Talk in French. **2.0,** Report on Winter Sports from South France. **3.0,** Concert by the Conservatoire Concert Society. **5.0,** Jazz Music, conducted by M. Roskam. **6.0,** Medical Talk in German. **6.15,** Sports Notes. **6.30,** Concert of Chamber Music. Soloist: Daniel Hermann (Violin). Quartet for Flute, Violin, 'Cello and Pianoforte (Telemann); Sonata for Two Violins and Pianoforte (Avison); Les regards (Mouret); Passepied, for Violin and Pianoforte (Destouches); Sextet for Two Violins, Two Violas and Two 'Cellos (Brahms). **7.30,** Time, News and Sports Notes. **7.45,** Orchestral Concert, conducted by M. Roskam: March, Folies Bergère (Lincke); Waltz, Brune ou Blonde (Waldteufel); Overture, Les Cloches de Corneville (Planquette); Serenade (Moszkowsky); Selection from Les mousquetaires au Couvent (Varney); March, Le défilé de la garde (Gillet). **8.25,** Lottery Results. **8.30,** Dramatic Programme in French. **10.30,** Popular Music on Gramophone Records. **11.0,** Quintet Concert, conducted by Jean Clergue, relayed from **Radio Colonial (Paris), (25.63 metres). 12 Midnight** (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and **FREIBURG, 570 metres.**—**10.30 a.m.,** See **Leipzig. 12.5 p.m.,** See **Vienna. 12.20,** Gramophone Concert of Variety Music. **1.0,** Third Automobile Races on the Titisee—Radio Report. **1.30,** Talk on Handicraft. **2.0,** See **Vienna. 2.30,** Talk on the German Tailoring Trade. **3.10,** Programme from **Berlin (Witzleben). 3.50,** Talk on Richard Wagner. **4.20,** Columbus—for Male Voice Choir, Soprano, Tenor, Baritone, and Full Orchestra (Heinrich Zöllner). **5.40,** Sports Notes. **6.0,** Programme of Alsatian Poems and Songs. **7.0,** See **Munich. 7.45,** See **Frankfurt. 9.0,** Time, Weather, News, Programme Announcements, and Sports Notes. **9.30,** Serenade by the Dance Ensemble of the Stuttgart Philharmonic Orchestra. **11.0** (approx.), Close Down.

SUNDSVALL.—See **Stockholm.**

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—**12.15 p.m.,** News Bulletin. **12.30,** Catholic Service. **1.0,** Amusement Guide and Market Prices. **1.5,** Orchestral Music. **1.15,** Music from Sound Films. **1.30,** Instrumental Solos. **1.40,** Agricultural Report. **1.45,** Protestant Service. **2.15,** News Bulletin. **2.20,** Orchestral Music. **2.45,** Chansonnettes. **3.0,** Accordion Music. **3.15,** News and Horse Racing Results. **3.20,** Viennese Orchestral Music. **3.45,** Airs from Opera. **4.15,** Horse Racing Results and News. **4.20,** Extracts from Sound Films. **4.30,** Dance Music. **5.0,** Light Music. **5.15,** News and Horse Racing Results. **5.20,** Music by an Argentine Orchestra. **5.30,** Orchestral Music. **5.45,** Instrumental Solos: Saxophone: Liebesflied (Kreisler); Violin: Hindu Song (Rimsky-Korsakov); Xylophone: Galop de l'Ecuyer (Oertel); Valse Vienne (Cayla). **6.0,** News. **6.15,** Operetta Music. **6.30 to 7.** Programme in English by the I.B.C.; Concert: Always in my heart; Mimi; Blue moon in the sky; Will you dance through life with me?; Ich liebe dich, my dear; Taboo, taboo; A little street where old friends meet; I don't want to go to bed. **7.0,** Bal musette. **7.15,** Time, Horse Racing Results, Market Prices, and News. **7.25,** Local News Bulletin. **7.30,** Military Music. **7.45,** Spanish Songs. **8.0,** Opera Music: Selection from La Traviata (Verdi); Overture, Carmen (Bizet); Overture, Norma (Bellini); Air from Grisélidis (Massenet); Aria from La Juive (Halévy); Aria, Softly awakes my heart, from Samson and Delilah (Saint-Saëns). **8.30,** Viennese Music: Selection from The Bird Fancier (Zeller); Der Rosebochzeitszug (Jessel); Viennese Waltz (Drda); Wedding of the Winds (Hall); Melody (Arezzo); Ballgeflüster (Meyer-Helmund). **9.0,** Variety Music. **9.30,** Orchestral Music: Marriage in Orient (Ptichystal); Dörnroschens Brautfahrt (Rhode); Down South (Myddleton); Glow Worm Idyll (Lincke); Aubade printanière (Lacombe); Old Spanish Song (Auber). **10.0,** Concert for Listeners in Morocco. **10.15,** North African News. **10.30,** Programme in English by the I.B.C.: Songs at the Piano: Songs I heard at Mother's Knee; You're the One I care for; Seven Veils; I want to sing about you; You brought a New Kind of Love to me; Adeline; Living in the Sunlight; Shake and let us be Friends. **11.15,** Military Music: Old Swiss Marches; March, Colonel Bogey (Alford); Per Aspera ad Astra (Urbach). **11.45,** Orchestral Music: Selection from The Golden Cockerel (Rimsky-Korsakov); Overture, Semiramis (Rossini). **12 Midnight,** Weather. **12.5 a.m. (Monday),** Choral Music. **12.15,** Dance Music. **12.50** (approx.), Close Down.

TRIESTE

247.7 metres; 10 kW.—**8.40 to 8.55 a.m.,** See **Turin. 8.55,** Mass, relayed from the Cathedral of San Giusto. **10.0 to 10.20,** Agricultural Talk. **11.0** till Close Down, See **Turin.**

TRONDHEIM.—See **Oslo.**

TURIN

273.7 metres; 7 kW. Relayed by **Milan, 331.5 metres; Genoa, 312.8 metres;** and **Florence, 500.8 metres.**—**8.1 a.m.,** Giornale Radio. **8.15,** Agricultural Report. **8.40,** Religious Programme. **8.55,** Mass, from the San Giusto Cathedral. **10.10,** Running Commentary on the E.I.A.R. International Skiing Contest, relayed from **Ortiser.** In the interval, Alpine Songs by the S.O.S.A.T. Choir. **11.30,** Orchestral Concert, conducted by Ugo Tansini. In the interval at **12 (Noon),** Time and Announcements. **12.20 to 1.30 p.m.,** Orchestral Concert. **1.35,** Running Commentary on the International Football Match, Belgium v. Italy, relayed from **Brussels.** Sports Notes and Gramophone Records in the interval. **4.0,** Concert, conducted by Dimitri Mitropoulos, relayed from the Augusteo. In the interval and after the Concert, Giornale Radio, Football Results and other Sports Notes. **6.0,** Dopolavoro Notes. **6.5,** Light Music on Gramophone Records. **8.0,** Relay of an Opera. In the intervals, Talk, Theatre Notes, and Giornale Radio.

VIENNA

517 metres; 15 kW. Relayed by **Graz, 352.9 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 245.9 metres;** and **Salzburg, 218.5 metres.**—**10.45 a.m.,** Report on the International Ski-Jumping Championship in Innsbruck. **11.0,** Wagner Concert from **Leipzig. 12.5 p.m.,** Report on the International Ski-Jumping Championship (contd.). **12.20 to 1.0,** Famous Light Orchestras—Gramophone Concert. **1.55,** Time and Announcements. **2.0,** Military Band Concert, relayed from **Innsbruck.** In an interval, Final Report on the International Ski-Jumping Championship. **3.30,** Review of Books. **Under the Southern Cross. 4.0,** Talk: **A Painter in Southern France. 4.30,** Silhouettes—by A. Gleichen-Russwurm. **5.0,** Concert of Light Music by the Otto Römser Orchestra. **6.30,** Time, Programme Announcements, and Report on the International Football Match, Austria v. France. **6.45,** Report on the International Ski-ing Championship in Innsbruck. **7.0,** Genius dwells here—Wagner Commemoration Programme, relayed from Wahnfried, Wagner's House in Bayreuth; Memorial Poems by Hans Reisiger. **7.45,** Der Tanzdämon—Radio Play in Two Parts (Ernst Decsey—Music by Eugen Zador). **8.45,** Gramophone Concert of Popular Music. **9.15,** News Bulletin. **9.30,** Carnival Entertainment by the Vienna State Opera House Choir, with Jazz Band and Soloists, relayed from the Hotel Münchner-hof.

WARSAW

1,411 metres; 120 kW.- **10.58 a.m.,** Time Signal and Bugle Call from the Tower of St. Mary's Church, Cracow. **11.5,** Programme Announcements. **11.10,** Weather Forecast. **11.15,** Concert by the Warsaw Philharmonic Orchestra, conducted by M. Mierzejewski. **Soloist:** Leon Bornnski (Pianoforte). Overture, Figaro (Mozart); Pianoforte Concerto in D Minor (Mozart); Symphony No. VII (Beethoven); Pianoforte Solo: Toccata and Fugue in C (Bach). In the interval, Talk. **1.0 p.m.,** Agricultural Talk. **1.20,** Concert. In the interval at **1.40,** Agricultural Talk. **3.0,** Programme for Children. **3.25,** Light Music on Gramophone Records. **3.45,** Talk: Chivalry in the Middle Ages, relayed from **Cracow (312.8 metres). 4.0,** Song and Violin Recital by Elvire Rowe Stalinska (Soprano) and J. Kaminski (Violin). **4.55,** Programme Announcements. **5.0,** Light Music from the Café Zentianska. In the Interval, News. **6.0,** Miscellaneous Items. **6.25,** Dramatic Programme. **7.0,** Concert of Popular Music. **8.0,** Sports Notes. **8.10,** Concert of Opera Music. **9.35,** Dance Music. **9.55,** Aviation Weather Forecast and Police Notes. **10.0,** Dance Music from the Café Gastronomia. **11.0** (approx.), Close Down.

ZURICH.—See **Schweizerischer Landessender.**

MONDAY

FEBRUARY THE THIRTEENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL	Orchestral concert. Organ music. Professor John Macmurray: "Some Makers of the Modern Spirit." Chamber concert. Jack Payne with his Band.
LONDON REGIONAL	Recital of gramophone records. Band concert. An Irish Half-hour. Orchestral music. Orchestral concert.
MIDLAND REGIONAL	Organ music. Orchestral concert. Dance music.
NORTH REGIONAL	Mr. F. W. Brooks: "The End of the Old Village." The Yorkshire Mummers' Concert Party. Organ recital. Orchestral concert.
WEST REGIONAL	Orchestral concert, from National Museum of Wales. Welsh interlude.
SCOTTISH REGIONAL	Orchestral concert. London Regional programme.
BELFAST	Recital of gramophone records. Dance music. Orchestral concert.

ABROAD

STRASBOURG	Song and pianoforte recital, by Charles and Madeleine Panzera.
STOCKHOLM	Acts 2 and 3 of "The Mastersingers."
WARSAW	Opera: "Tristan and Isolde" (Wagner), relayed from Dresden, and conducted by R. Strauss.
	Wagner commemoration concerts from **Brussels (No. 2), Strasbourg, Copenhagen, Rome, Hilversum, Zurich, etc.**

ATHLONE

413 metres; 60 kW.; and CORK, 224.4 metres.— **1.30 to 2.0 p.m.,** Time Signal, Weather Report, Stock Report and Light Music on Gramophone Records. **6.0,** Popular Music on Gramophone Records. **6.15,** Programme for Children. **7.0,** Light Music on Gramophone Records. **7.20,** News. **7.30,** Time Signal. **7.31,** Gaelic Talk. **7.45,** Talk for Farmers: Insect Pests of Cereals and Root Crops. **8.0,** The Station Orchestra. **8.30,** The Pigeon—Play presented by Ian Priestly Mitchell and Company. **9.0,** Tenor Solos by Gerard Crofts. **9.15,** Accordion Solos by Terry Lane. **9.30,** Songs by Nora Finn (Contralto). **9.50,** Irish Music by the Station Orchestra. **10.0,** Traditional Trio Music. **10.30,** Time Signal, News, Weather Report and Close Down.

BARCELONA

RADIO-BARCELONA, Call EAJ1, 348.8 metres; 8 kW.—**6.0 p.m.,** Trio Concert. **7.0,** Request Gramophone Concert. **7.30,** Exchange Quotations and a Talk by Arthur Balot. **8.0,** Popular Music on Gramophone Records and News. **9.0,** Chimes from the Cathedral, Weather Forecast, Exchange Quotations and Market Prices. **9.5,** Humorous Review of the Week in Verse. **9.15,** Concert of Sardanas. **10.0,** Chamber Music: Quartet No. 2 in F (Glazunov). **10.30,** Concert by the Station Orchestra: Arabesque No. 2 (Debussy); Waltz Intermezzo (d'Ambrosio); Minuet from the Symphony in E Flat (Mozart); Carnaval (Guiraud); Melody (Percy). **10.30,** Dance Music, relayed from the Hollywood Bar. **11.0** (in an interval), News. **12 Midnight** (approx.) Close Down.

BARI

269.8 metres; 20 kW.—**7.0 p.m.,** Agricultural Notes, Tourist Talk and Dopolavoro Announcements. **7.20,** Giornale Radio and Weather. **7.30,** Time Signal and Announcements. **7.35** (approx.), Concert of Operetta Music and Songs. In the intervals: Book Review and Humorous Talk. **9.55,** News Bulletin.

BASLE.—See **Schweizerischer Landessender**

BELGRADE

BEOGRAD, 430.4 metres; 2.8 kW.—**3.0 p.m.,** Concert by the Radio Orchestra: Overture, Phèdre (Massenet); Selection from Fedora (Giordano); Suite from Les Erynnies (Massenet); Oriental Fantasia, Arabian Gold (Rust). **4.0,** Dialogue in German. **5.55,** Time and Programme Announcements. **6.10,** Light Music on Gramophone Records. **6.50,** Introductory Talk to the following Relay. **7.0,** Part relay of The Mastersingers—Opera (Wagner) from the National Theatre, Zagreb. In an interval at **8.30** (approx.), News.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—**11.55 a.m.,** Nauen Time Signal. **12.35 p.m.,** News Bulletin. **1.0,** Gramophone Concert, relayed from **Berlin (Witzleben).** **2.0,** Talk for Women on Handicrafts. **2.30,** Weather and Exchange. **2.45,** Review of Books. **3.0,** Talk: For which Ailments are Schools Closed? **3.30,** Concert from **Berlin (Witzleben).** **4.10,** Talk: The Indian Woman. **4.30,** Chamber Music: Saxophone Quartets: Lyric Suite in Three Movements for Three Saxophones and Pianoforte (Gerhard Pordes), with the Composer at the Pianoforte; Quartet for Four Saxophones in Five Movements (Hermann Griselle). **5.0,** Talk: Public Administration in Scandinavia. **5.30,** Making Music with Invisible Partners. **5.55,** Weather and Announcements. **6.0,** English Lesson. **6.30,** A Poem. **6.35,** Talk on the following Transmission. **6.45,** Second and Third Acts of Tristan and Isolde—Opera (Wagner), from **Leipzig.** **9.25,** Weather, News and Sports Notes. **9.45,** Weather Report for Shipping. **10.0,** Serenade from **Munich.** **11.0** (approx.), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—**3.30 p.m.,** Concert by the Munich Viol Quintet: Chanson (Sweelinck); Kyrie (Dufay); Canzone (Monteverdi); Canzone (Merulo); The Two First Fugues from The Art of the Fugue (Bach); Old English Dances; Three Pieces (Purcell): (a) Trumpet Air, (b) Air, (c) Hornpipe. **4.15,** Old Music on Gramophone Records. **4.30,** Talk: Gallantry in Everyday Life. **4.50,** Talk on Skating. **5.10,** Concert from the Café Berlin. **5.30,** Hanns Michael Ken reads from his own Works. **5.55,** The Witzleben Station informs its Listeners . . . . . **6.0,** Topical Talk for the Wagner Anniversary. **6.15,** Ten Minutes for the Music Lover. **6.25,** Concert from the Café Berlin (contd.). **7.0,** Introductory Talk to the following Transmission. **7.5,** The Flying Dutchman—Opera (Wagner), relayed from the Municipal Opera House, Charlottenburg. **9.15** (approx.), Weather, News, and Sports Notes. **9.30** (approx.), Dance Music from the Europa Pavillon. **11.0** (also relayed by **Zeesen on 31.38 metres**), Wagner Memorial Programme, relayed from Wahnfried, Wagner's House in Bayreuth (Reproduction on Gramophone Records).

BERNE.—See **Schweizerischer Landessender.**

BEROMUNSTER. — See **Schweizerischer Landessender.**

BODEN.—See **Stockholm.**

BODO.—See **Oslo.**

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—**7.30 p.m.,** News, Exchange, and Market Prices. **7.40,** Talk: Bordeaux a Hundred Years Ago. **7.55,** Lottery Results. **8.0,** Programme for Children. **8.15,** Charades. **8.20,** News and Weather. **8.30,** Instrumental Concert of Classical and Modern Music.

BRATISLAVA

279 metres; 14 kW.—**3.10 p.m.,** Concert by the Station Orchestra, conducted by F. Dyk: Piece for Orchestra; Overture, Richard III (Humphries); Fantasia on Themes by Dvorak (arr. Leopold). **4.10,** Talk on Music. **4.25,** Popular Music on Gramophone Records. **5.0,** Three Sonatas for Violin and Pianoforte: (a) Sonata in G (Mozart), (b) Sonata in D Minor (Brahms), (c) Sonata (Janacek). **6.0,** See **Prague.** **6.5,** Literary Review. **6.20,** See **Prague.** **6.40,** A Play (Plesko). **7.30,** Light Music on Gramophone Records. **7.40,** See **Prague.** **9.15** (approx.), Close Down.

BREMEN.—See **Hamburg.**

BRESLAU

325 metres; 60 kW.; and **GLEIWITZ, 253 metres.**—**12.5 p.m.,** Weather for Farmers. **12.10,** Gramophone Concert: Overture, Raymond (Thomas); Concert Waltz (Glazunov); Fantasia on The Blue Danube Waltz (Strauss-Grothe); Selection from Zur goldenen Liebe (Benatzky); Waltz from Polenblut (Neibal); Selection from Boccaccio (Suppé). **12.45,** Time, Weather, News, Exchange and Shipping Reports. **1.5,** Wagner Concert on Gramophone Records: Homage March; Aria from Tannhäuser; Wotan's Farewell and Fire Magic from The Valkyries; Quintet from The Mastersingers; Dance of the Apprentices from The Mastersingers. **1.45,** Sponsored Programme with Gramophone Records. **2.10,** Agricultural Prices. **2.40,** Book Review. **3.0,** Talk: The Census. **3.20,** Orchestral Concert: Argentine March, Bella vista (Morena); Academic Festival Overture (Brahms); Violin Solo: Kubelik berenade (Drdla); Divertimento, Op. 2, No. 1, for Pianoforte and Chamber Orchestra (Pillney); Selection from Die Puppenfee (Bayer); Klagendes Gedenken (Dvorák); Berceuse (Dvorák); Die Mär vom tapferen Schneiderlein (Zimmer); Selection from Die geschiedene Frau (Fall). **4.45,** Agricultural Prices. **4.50,** Talk: Telling the Time by the Sun—the Heavens in February. **5.10,** Educational Notes. **5.35,** I knew Wagner—Dialogue between Wilhelm Kienzel and Heinrich Eduard Jacob. **6.0,** Talk: Richard Wagner's Place in German Literature. **6.25,** Weather for Farmers, followed by French Lesson. **6.45,** Relay of Act II of Tristan and Isolde—Opera (Wagner), from **Leipzig.** **7.50,** Announcements. **8.0,** Concert of the Lesser known Works of Wagner. Soloists: Ilka Ballies (Soprano) and Gerhart Bertermann (Baritone). Overture, Christopher Columbus; Songs from Faust: (a) Unter der Linde, (b) Brauers Lied, (c) Es war einmal ein König, (d) Meine Ruh' ist hin; Second Movement from the Symphony in C; Romance; Sanfte Wehmut will sich regen; Die beiden Grenadiere; Kaiser Marsch. **9.0,** Time, Weather, News, Sports Notes, Colonial Market Prices and Programme Announcements. **9.20,** Answers to Technical Wireless Questions. **9.30,** Talk. **9.50** (approx.), Close Down.

BRNO

342 metres; 35 kW.—**4.40 p.m.,** Microphone Report from a Tailor's Workshop. **5.0,** Talk: Gymnastics and Sports. **5.15,** See **Prague.** **5.25,** German Transmission: News, Elementary French Lesson and Talk. **6.0,** See **Prague.** **6.20,** Review of New Books. **6.40,** Brno Pastimes Fifty Years Ago—Radio Play (Indra). **7.40,** See **Prague.** **9.15** (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—**12 Noon,** Concert by the Small Station Orchestra, conducted by P. Leemans. **1.0 p.m.,** Le Journal Parlé. **1.10,** Light Music on Gramophone Records. **2.0,** Educational Programme. **5.0,** Concert by the Radio Orchestra, conducted by Franz André: Walloon March (Etnotte); Petite Suite (Daneau); Charles Brahon (Dejoncker); Berceuse for Violin (Brenta); Petite Suite de Ballet (Kalkman); Humoresque (Demaret); Popular Dances (Grétry). **6.0,** Gramophone Concert: Overture, La Chasse du Jeune Henri (Méhul); Three Airs from Richard Coeur de Lion (Grétry); Melody from Les Deux Avares (Grétry); Ballet Music from Céphale et Procris (Grétry). **6.30,** Talk: The Carnival at Binche. **7.0,** Monologue and Songs in Namur Dialect, by Jules Evrard. **7.15,** Talk: The Walloon Movement. **7.30,** Theatre and Film Reviews. **8.0,** Recital of Songs by Montois, by Fernand Dessart and the Cercle Royal Montois. **8.45,** Talk: Brussels and the Language Question. **9.0,** Concert by the Radio Orchestra, conducted by Franz André: March, Sortie militaire (Faulx); Potpourri of Popular Airs from Charleroi (Wangermee); Adagio pathétique for Violin (Marsick); Melody for Trumpet (Poulenc); Petite Suite (Jongen); The Brontogaurus (Sikes); March (Sikes); Waltz (Kufferath); Cramignons. **10.0,** Le Journal Parlé. **10.10,** Light Music on Gramophone Records. **11.0** (approx.), Close Down.

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW.—Programme in Flemish.—**12 Noon,** Gramophone Concert: Two Pieces (Ivory): (a) Marche de Neptune, (b) La maisonette de pains d'épices; Arlequin (Lalo); Selection from Hansel and Gretel (Humperdinck); Le dernier Sommeil de la Vierge (Massenet); Waltz (Gaune); Minuet No. 1 (Paderevsky); Serenade (Schubert); Air from La Bohème (Puccini); Andante religioso (Thomé); Gnomenreigen (Liszt); Serenade (Moszkowsky); Pas des Echarpes (Chaminade); Overture, Alessandro Stradella (Flotow). **1.0 p.m.,** Le Journal Parlé. **1.10,** Concert by the Small Station Orchestra, conducted by P. Leemans. Soloist: M. Wigy. Parade March (Ratez); Suite of Viennese Waltzes (Gilson); Simple aveu (Thomé); Air from Dinorah (Meyerbeer); Melody (Löhr); Spanish Dance No. 5 (Granados); Mazurka for Violin (Zarzicky); Four Dances (Robrecht). **2.0,** Educational Programme. **5.0,** Concert by the Small Station Orchestra, conducted by P. Leemans. Overture, Preciosa (Weber); Petite suite miniature (Dubois); Berceuse, L'Arlequin (d'Dibone); Rubinstein Potpourri (Urbach); Algerian Song, Le ramier (Guillemyn); Saltarella (Luigini). **5.45,** Programme for Children. **6.30,** Concert by the Small Station Orchestra, conducted by P. Leemans. Soloists: M. Derissen ('Cello), and F. Gilman (Flute). Overture, Russian and Ludmilla (Glinka); Suite from Izeyl (Bienné); 'Cello Solo: Träumerei (Schumann); Flute Solo: Hungarian Pastoral Fantasia (Doppler); The Flight of the Bumble Bee (Rimsky-Korsakov); Gopak (Mussorgsky); Le Nil (Leroux); Suite, Fêtes Romaines (Fourdrain). **7.15,** Talk. **7.30,** Programme by Pirreke Pirrewit. **8.0,** Wagner Concert by the Radio Symphony Orchestra, conducted by Jean Kumps. Soloist: Jeanne Lauwers Vanhommerich (Songs). Faust Overture; Siegfried Idyll. Songs: (a) Träume), (b) Elsa's Aria from the Second Act of Lohengrin. **8.45,** Talk. **9.0,** Concert (contd.): Prelude to Lohengrin; Forest Murmurs; Songs: (a) Senta's Ballad from The Flying Dutchman, (b) Elizabeth's Prayer from Tannhäuser; The Ride of the Valkyries. **10.0,** Le Journal Parlé. **10.10,** Gramophone Concert of Dance Music. **11.0** (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—**4.0 p.m.,** Concert by the Station Orchestra: Turkish March (Beethoven); Kaiser-Walzer (Joh. Strauss); Overture, Iphigenia in Aulis (Gluck); Selection from La Juive (Halevy); Memories of Grieg (Urbach). **5.0,** News and Time Signal. **5.10,** Talk. **5.25,** Concert (contd.): Burlesque (Poot); Intermezzo (Jannone); Pudding Potpourri (Morena). **6.0,** Talk Native Romanian Animals. **6.40,** Light Music on Gramophone Records. **7.0,** Time Signal. **7.2,** Chamber Music: Quartet in C Minor, Op. 18, No. 4 (Beethoven). **7.45,** Quartet in D (Smazenihl). In the interval at **7.30,** Talk. **8.15,** Concert of Light Music and Romanian Music by the Dinico Orchestra, relayed from the Enesco Restaurant. **9.0,** News Bulletin.

BUDAPEST

550 metres; 18.5 kW. Also relayed on **840 metres** from **6.30 to 11.0 p.m.**—**4.30 p.m.,** Cigány Music by Gyula Kocze and his Band. **5.30,** German Lesson. **6.0,** Reading. **6.40,** Brahms Concert by the Philharmonic Orchestra, conducted by Ernst Dohnanyi, relayed from the Royal Hungarian Opera House; Soloist: Poldi Mildner (Pianoforte); Tragic Overture; Pianoforte Concerto in D Minor; Symphony in D. **9.0,** News Bulletin. **9.15** (approx.), Dance Music by the Mandits Dance Band, relayed from the Café New York; Soloist: Karl Vajda (Songs). **10.15,** Talk in English, followed by Cigány Music from the Café Spolarich. **11.0** (approx.), Close Down.

CASSEL.—See **Frankfurt.**

COPENHAGEN

281 metres; 0.75 kW.; and **KALUNDBORG, 1,153 metres;** 7.5 kW.—**11.0 a.m.,** Time and Chimes from the Town Hall. **11.5,** String Ensemble Concert, conducted by Max Skalka. **1.0 to 2.20 p.m.,** Interval. **2.20,** Talk for the Housewife. **2.30,** Concert by the Radio Orchestra, conducted by Emil Reesen: Overture, Der Waffenschmied (Lortzing); Selection from La Boite à joujoux (Debussy); Cancion and Danza from Acuarelas Valencianas for Strings (Chavarri); Waltz, España (Waldteufel); Allegro di bravura and Tarantella from the Gipsy Suite (German); Reading; March from The Chocolate Soldier (O. Straus); Selection from Johnny spielt auf (Krenek); Intermezzo from Tiefland (D'Albert); Selection from Blade of Aarets Billedbog (Glass): (a) Blomstervals, (b) Tranedans; Alfedans from Weyland the Smith (F. Henriques); March from Sigurd Jorsalfar (Grieg). **4.40,** Exchange and Fish Market Prices. **4.50,** Talk. **5.20,** English Lesson. **5.50,** Weather Forecast. **6.0,** News. **6.15,** Time Signal. **6.30,** Talk: Women in Communal Life. **7.0,** Chimes from the Town Hall. **7.5,** Wagner Concert on the Fiftieth Anniversary of the Composer's Death. The Station Orchestra, conducted by Launy Grondahl. Soloists: Tenna Frederiksen Kraft and Marius Jacobsen (Songs). Overture, The Flying Dutchman; Talk; Forest Murmurs from Siegfried; Song: Elsa's Dream from Lohengrin; Prelude to Act Three of Lohengrin; The Story of the Grail from Lohengrin; Prelude to Tristan and Isolde. After the Concert: Richard Wagner's Last Evening—Sketch (Julius Clausen). **8.35,** News. **8.50,** Introductory Talk to the following Transmission. **9.0,** Relay of the Third Act of The Mastersingers—Opera in Three Acts (Wagner), from the Royal Theatre. **10.45** (approx.), Close Down.

CORK.—See **Athlone.**

CRACOW

312.8 metres; 1.5 kW. **4.30 p.m.**, News and Programme Announcements. **4.40**, Talk on Wagner. **5.0**, See **Leipzig**. In the intervals at **6.20**, Miscellaneous Items and Announcements, at **6.40**, Talk: An Analysis of Act II. of Tristan and Isolde, at **7.50**, Announcements from **Warsaw**, and at **8.10**, An Analysis of Act III of Tristan and Isolde. **9.30** till Close Down. See **Warsaw**. **11.0** (approx.), Close Down.

DANZIG.—See **Heilsberg.**

DRESDEN.—See **Leipzig.**

DUBLIN.—See **Athlone.**

FECAMP

223 metres; 10 kW. **6.0 to 7.0 p.m.**, Programme in English by the I.B.C. **6.0**, Orchestral Concert for Hastings Listeners: Waltz, The Blue Danube (Joh. Strauss); Der Rosehochzeitszug (Jessel); Bells across the Meadow (Ketelbey); In a Pierrette's Garden (Brookes); Serenade (Moszkowsky); Devotion (Ketelbey); Columbine (Garland); Moonlight on the Alster (Fetras). **6.30**, Concert for Eastbourne Listeners: Songs: The Future Mrs. 'Awkins (Chevalier); Just a Dancing Sweetheart (Tobias); My Old Dutch (Chevalier); My Old Irish Mother (O'Donnell); Life (Sarony); Lily of Laguna (Stuart); Poor Kid (Gilbert); Little Dolly Daydreams (Stuart). **10.0** till Close Down. Programme in English by the I.B.C. **10.0**, Dance Music. **11.0**, Orchestral Concert: Erster Walzer (Robrecht); Poupée valsante (Poldini); The Rose Beetle goes a-wooing (Armandola); Demande et Réponse (Coleridge Taylor); On Wings of Song (Mendelssohn); Sicilian Serenata (Schmalstich); Poem (Fibich). **11.30**, Song Recital: Orchestra, What's next? (arr. Finck); Hoein' (Richards); The Village Blacksmith (Weiss); I'm a roamer (Mendelssohn); Leanin' (Sterndale Bennett); The Windmill (Nelson); The Company Sergeant-Major (Sanderson). **12 Midnight**, Variety Music: Old Timers (arr. Griffiths); Harmonica Duet: Polly (Zamecrik); Sketch: Corporal Hoskins; Song: Cooking Breakfast for the One I love; Handsaw Solo Dear Old Pal of mine (Rube); Song: When a Woman loves a Man. **12.30 a.m. (Tuesday)**, Light Songs: I'm walking in the Sun; Lovin' you the way I do; Overnight; More than you know; They'll all be there but me; Back to Gay Paree; You'll be mine in Apple Blossom Time; We're uncomfortable. **1.0**, Organ Recital: The Match Parade (Wehle); Home (Streeden); The White Dover (Grey-Lehár); Trees (Rasbach); On Wings of Song (Mendelssohn); There's nothing new in love (Maclean); Rose of Picardy (Haydn Wood); The Butterfly Waltz Song (Ralton). **1.30**, Light Songs: Could I be happy? (Donaldson); Got the Bench, got the Park (Donaldson); If the World belonged to me; You didn't have to tell me (Donaldson); Fanny the Fairy Queen (Hamilton); Please don't talk about me; You forgot your Gloves (Hamilton); Walking my Baby back Home. **2.0**, Dance Music. **2.57**, I.B.C. Good-night Melody. **3.0** (approx.), Close Down.

FLENSBURG.—See **Hamburg.**

FLORENCE.—See **Turin.**

FRANKFURT

259 metres; 17 kW.; and **CASSEL, 245.9 metres.**—**4.0 p.m.**, See **Langenberg.** **5.15**, Exchange Quotations. **5.25**, Talk: Germany's Dark Days ten Years ago. **5.50**, Time, Programme Announcements and Weather. **6.0**, English Lesson. **6.25**, Helden und Welt—a Dialogue (Heinrich von Stein) with Introduction by Richard Wagner. **7.5**, See **Stuttgart.** **9.0**, Time, News, Weather and Sports Notes. **9.30**, Dialogue: Educational Pictures of Life at the Zoo. **9.45**, See **Munich.** **11.0** (approx.), Close Down.

FREDRIKSSTAD.—See **Oslo.**

FREIBURG.—See **Stuttgart.**

GENEVA.—See **Radio-Suisse Romande.**

GENOA.—See **Turin.**

GLEIWITZ.—See **Breslau.**

GOTEBORG.—See **Stockholm.**

GRAZ.—See **Vienna.**

HAMAR.—See **Oslo.**

HAMBURG

Call ha (in Morse), **372 metres**; 1.5 kW. Relayed by **Bremen, 269.8 metres**; **Flensburg, 227.4 metres**; **Hanover, 566 metres**; and **Kiel, 232.2 metres.**—**6.5 p.m.**, Review of Books. **6.25**, Weather Report. **6.30**, Poems for Town Dwellers (Walter Bauer). **6.45**, See **Leipzig.** **7.50**, First General News. **8.0** (from **Hanover**), To the Rhythm of Machines—Radio Poem in Four Scenes (Werner Schmann). **9.0**, News Bulletin. **9.10**, Topical Talk. **9.20**, Concert from the Osterman Restaurant. In an interval at **9.50**, Ice Report. **10.15**, Dance Music from the Atlantic Hotel, Bremen.

HANOVER.—See **Hamburg.**

HEILSBERG

276.5 metres; 60 kW.; and **DANZIG, 453.2 metres.**—**12.5 p.m.**, Wagner Concert, on Gramophone Records, of The Berlin Opera House Orchestra, conducted by Karl Muck. Soloist: Friedrich Schoor (Songs). Overture, The Flying Dutchman; Aria from the Flying Dutchman; Siegfried Idyll; Air from

FEB. 13th MONDAY *continued*

The Mastersingers; Prelude to Parsifal; Overture, Tannhäuser; March from The Twilight of the Gods. In the interval at **12.20 p.m.**, News. **1.30 to 2.0**, Interval. **2.0**, Agricultural Prices and Exchange Rates. **2.30**, Programme for Children. **3.0**, Concert by the Small Station Orchestra, conducted by Eugen Wilcken: Fasching-Ouverture (Leuschner); Melody from Les Millions d'Arlequin (Drigo); Waltz, Faschingskinder (Ziehrer); Karneval-Miniaturen (Kaskel); Melody (Murzilli); Melody; Rhapsody, Pesther Carneval (Liszt); Overture, Der Karneval in Rom (Joh. Strauss). In the interval at **3.45** (approx.), Memorable Days of the Week. **4.30**, German Lesson. **4.45**, Book Review. **5.15**, Agricultural Prices. **5.20**, Ice Report. **5.30**, Recital of Folk Songs by Tony Jaeckel (Soprano and Lute), Kees Veening (Baritone) and Gerhard Rüchel (Violin). **6.0**, Technical Talk. **6.15**, Weather Report. **6.20**, Relay from **Leipzig** of the Second and Third Acts of Tristan and Isolde, preceded by Talk. **9.25**, Weather, News and Sports Notes.

HILVERSUM

Announced **HUIZEN; 296.1 metres**; 20 kW. (7 kW. up to **4.40 p.m.**).—Programme of the Christian Radio Society (N.C.R.V.). **11.10 a.m.**, Gramophone Records of Variety Music. **11.40**, Police Notes. **11.55**, Symphonic Poem, Les Préludes (Liszt) on Gramophone Records. **12.10 p.m.**, Organ Recital from **Amsterdam.** **1.40**, Talk for Schools: Chinese Children in India. **2.15**, Gramophone Records of Dutch Music. **2.25**, Talk on Fish Recipes. **2.55**, Dressmaking Lessons. **3.25**, Programme to be announced. **3.40**, Bible Reading and Sacred Songs. **4.40**, Gramophone Records of Mendelssohn Music. **4.55**, Recital of Sacred Songs. **5.55**, Passacaglia in C Minor (Bach) on Gramophone Records. **6.10**, Questions Time. **7.10**, Police Notes. **7.25**, News Bulletin. **7.40**, Programme arranged by the Free University, relayed from a Church in Amsterdam: Speeches and Choral and Organ Music. **9.55**, News Bulletin. **10.5**, Gramophone Concert. Part 1: Wagner Music: Overture, Rienzi; Soprano Solo with Choir; The Pilgrims Chorus from Tannhäusser; Aria from Tannhäuser; Prelude to the Third Act of Tristan and Isolde; Four Arias from The Valkyries; Siegfried Idyll; Good Friday Magic from Parsifal (Part II); Organ Solos: (a) Le Cygne, (b) Prelude Op. 99 (Saint-Saëns); Songs with Organ, 'Cello and Harp Accompaniment (a) Caro mio ben (Giordano), (b) Largo (Handel); Psalms 33 and 89; Choir: Two Sacred Pieces. **11.40** (approx.), Close Down.

HORBY.—See **Stockholm.**

HUIZEN

Announced **HILVERSUM, 1,875 metres**; 8.5 kW.—Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.).—**11.40 a.m.**, Time Signal **11.41**, Concert by the Small Wireless Orchestra, conducted by Nico Treep: Blue Devils March (Williams); Overture, The Well of Love (Balfe); Three Plantation Songs (Clutsan); Spring awakes (E. Bach); Krakowisk (Leopold); Czech Polka (Balling); Waltz, Over the Waves (Rosas). Interlude: Gramophone Records, Selection from Mignon (Thomas); Chant sans paroles (Tchaikovsky); Violin Solo, Dream of Love (Reece); The little Pfiffikus (Kockert); Revue Stars (Kockert). Interlude: Gramophone Records, Second Waltz Potpourri (Robrecht); Selection from Viktoria and her Hussar (Abraham); March, Sempre avanti (Fucik). **1.55 to 2.10 p.m.**, Interval. **2.10**, Concert by the Wireless Chamber Orchestra, conducted by Nico Berharz: Overture, L'Ile de Tulipatan (Offenbach); Suite of Nursery Songs (Bleeh); Moonbeams and Shadows (Squire); Florentine Intermezzo (Waghalter); Old Minuet (Sgambati-Artok) Selection from Le petit duc (Lecocq). Interlude: Gramophone Records, Waltz, Dreams on the Ocean (Gungl); Tango, We say "Good-bye" (Moretti); Tango, Promesas (Pizaro); Strauss Potpourri (Weber). **3.40**, Pianoforte Recital of Russian Music by Victor Babin: Tragic Poem (Scribin); Waltz (Scriabin); Airs (Prokofiev): (a) Suggestion diabolique, (b) March, (c) Toccata. Suite from Petroushka (Stravinsky). **4.10**, Talk on Music, with Gramophone Illustrations. **5.10**, Concert of Light Music by the Kovsacs Lajos Orchestra. Bob Scholte (Songs). **6.10**, Book Review. **6.40**, Orchestral Concert (contd.). **7.10**, Talk. **7.30**, Light Music on Gramophone Records. **7.40**, Time. **7.41**, News. **7.45**, Concert by the Wireless Orchestra, conducted by Nico Treep. Soloist: Lia Fuldauer (Soprano). Marche solonnelle (Tchaikovsky); Three Pieces from the Iveria Suite (Ippolitov-Ivanov); Arias from: (a) The Merry Wives of Windsor (Nicolai), (b) Les Huguenots (Meyerbeer); Waltz, Neu Wien (Joh. Strauss); Selection from Madame Butterfly (Puccini); Arias from: (a) Mignon (Thomas), (b) The Golden Cross (Brüll); Forget-me-not (Macbeth); Melody Moret); Chromatic Gallop (Liszt). **9.10**, Concert of Light Music by Edith Lorand's Chamber Orchestra. **10.10**, Popular Music on Gramophone Records. **10.40**, News. **10.45**, Dance Music by the Ramblers, relayed from the Zuid Restaurant, the Hague. Conductor: Theo Uden Masman. **11.20** (approx.), Close Down.

INNSBRUCK.—See **Vienna.**

JUAN LES PINS

NICE, 249 metres; 0.8 kW.—**8.0 p.m.**, Amusement Guide, News, Financial Report, Exchange and Racing Results. **8.15** (approx.), Sports Talk. **8.30**, Concert. **9.0**, Weather and News. **9.15**, Dramatic Programme.

KALUNDBORG.—See **Copenhagen.**

KATOWICE

408 metres; 16 kW.—**3.25**, See **Warsaw.** **6.20**, Talk: Young Poles Abroad. **6.35**, Announcements and Popular Music on Gramophone Records. **6.40**, Talk on Act III of Tristan and Isolde, relayed from **Cracow (312.8 metres).** **6.45**, Acts II and III of Tristan and Isolde, relayed from **Leipzig.** **9.30**, The Technical Letter Box. **9.45**, See **Warsaw.**

KAUNAS

1,935 metres; 7 kW.—**7.10 p.m.**, Chamber Music Concert. **7.40**, Talk on Ornithology. **8.0**, Lithuanian and Ukrainian Report. **8.30**, Sports Notes. **8.40**, Evening Concert. **9.30** (approx.), Close Down.

KIEL.—See **Hamburg.**

KLAGENFURT.—See **Vienna.**

KOSICE.—See **Prague.**

LAHTI

1,796 metres; 30 kW.; and **HELSINKI, 368.1 metres.**—**5.50 p.m.**, Violin Recital by Irma Salmela: Larghetto (Handel); Prelude and Gavotte (Bach); Piece (Mendelssohn-Achron). **6.15**, Talk. **6.40**, Wagner Concert on the Fiftieth Anniversary of his Death: The Radio Orchestra, conducted by Erkki Linko; Soloist: Erik Cronvall ('Cello): Overture, Lohengrin; Talk: Overture, The Flying Dutchman; Air from Tannhäuser; 'Cello Solo: Träume; Overture, The Mastersingers. **7.45**, News in Finnish. **8.0**, News in Swedish.

LANGENBERG

473 metres; 60 kW. **12 Noon**, Concert conducted by Eysoldt: March, Mein Gruss an Schwehn (Borschel); Overture, Die Landstreicher (Zielfrer); Selection from Der Freischütz (Weber); Duet from As You Like It (Wetzler); Walther's Prize Song from The Mastersingers (Wagner); Waltz, Herbststimmung (Lincke); First Suite from Impressioni orientali (Amadei); Selection from Der Obersteiger (Zeller); Burlesque (Südermann); Toréador et Andalouse (Rubinstein). **1.0 p.m.** (in an interval), News Bulletin. **1.30**, Meat Market Prices. **2.30**, Exchange and Time. **2.50**, Programme for Children. **3.20**, Programme for Young People: Reading of Poems and Stories and Recital of Songs. **4.0**, Concert, conducted by Wolf. Soloist: Hermann Munk (Songs to the Lute). Overture, Meeresstille und glückliche Fahrt (Mendelssohn); Ballet Music from Rosamunde (Schubert); Weber's Guitar Songs (a) Die Zeit, (b) Erinnerung, (c) Der arme Minnesänger, (d) Romance from Diana von Porti, (e) Alte Weiber; First Little Suite (de Micheli); Waltz, Morgenblätter (Strauss). **5.0**, Review of New German Novels and Short Stories. **5.20**, Talk for Parents: Shall our Child go to a Secondary School? **5.45**, Weather, Time, Exchange, and Sports Notes. **6.0**, Talk for Women. **6.20**, Reading of Poems by Bernhard Rang. **6.30**, Talk: Problems of Handicrafts. **6.55**, First General News. **7.0**, See **Stuttgart.** **9.5**, News and Sports Notes. **9.25**, Serenade on Gramophone Records. **9.45**, See **Munich.** **11.0** (approx.), Close Down.

LAUSANNE.—See **Radio-Suisse Romande.**

LEIPZIG

389.6 metres; 120 kW.; and **DRESDEN, 319 metres.** **11.5 a.m.**, Gramophone Concert: Andante and Minuet from the Sixth Symphony (Haydn); Fourth Movement from the Jupiter Symphony (Mozart); Largo from the Concerto in D Minor for Two Violins (Bach); Alleluia Chorus from The Messiah (Handel); Fantasia in C (Schubert); Aria from Il re pastore (Mozart); Allegretto scherzando from Symphony No. 8 in F, Op. 93; Overture, Iphigenia in Aulis (Gluck). **12 Noon**, News, Weather, Snow Report and Time. **12.15 p.m.**, Gramophone Concert: Overture, Der Freischütz (Weber); Hunter's Chorus, from Der Freischütz (Weber); Two Songs (Schumann): (a) Du bist wie eine Blume, (b) Widmung; Scherzo from the Quartet in A Minor (Schumann); Rhapsody in G minor (Brahms); Aria from Hans Heiling (Marschner); Overture to the Fairy Opera, Christelflein (Hans Pfitzner). **2.35**, Exchange and Market Prices. **3.0**, Concert by the Dresden Philharmonic Orchestra, conducted by Josef Gustav Mraczek: Overture, Undine (Lortzing); German Rococo Suite (Günther); Melodies from Die drei Pintos (Weber); Serenade Op. 49 (Draeseke); Nocturne Op. 13 (Trapp). **4.45**, Talk on Bayreuth. **5.0**, Tristan and Isolde—Opera in Three Acts (Wagner). In the first interval at **6.20** (approx.), Talk: Tristan and Isolde as Literature. In the second interval at **7.50**, Talk: Tristan and Isolde as an Emotional Experience. **9.25**, News Bulletin, followed by Silent Night.

LINZ.—See **Vienna.**

LJUBLJANA

574.7 metres; 2.5 kW.—**5.30 p.m.**, Esperanto Lesson. **6.0**, Serbo-Croatian Lesson. **6.30**, Talk on Hygiene. **7.0**, Programme relayed from **Zagreb, 307 metres.** **9.0**, Time, News and Light Music on Gramophone Records.

LWOW

381 metres; 16 kW. **6.20 p.m.**, Miscellaneous Items. **6.40**, Programme relayed from **Cracow (312.8 metres).** **6.45**, Acts II and III of Tristan and Isolde—Opera (Wagner), relayed from Leipzig. In the interval at **7.5**, See **Warsaw.** **9.30**, Reading. **9.45**, See **Warsaw.** **10.30** (approx.), Close Down.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—**7.30 p.m.**, Radio Gazette for Lyons and the South East. **8.30**, Popular Music on Gramophone Records. **8.50**, Concert of French Music, relayed from the Salle du Conservatoire. After the Concert, News Bulletin.

MADRID

ARANJUEZ (EAQ), 30.43 metres; 20 kW.—**10.30 p.m.**, Popular Concert. **10.45**, Radio Chronicle. **11.0**, Popular Concert (contd.). **11.35**, Sports and Bull-fighting Notes. **11.55**, Light Music. **12 Midnight** (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 424.3 metres; 2 kW.—**7.0 p.m.**, Chimes, Exchange Quotations and Request Gramophone Concert. **8.15**, News Bulletin. **8.30** (approx.), Close Down.

MALMO.—See **Stockholm.**

MILAN.—See **Turin.**

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—**5.30 p.m.**, German Transmission: Talks: (a) Motor Touring in France, Corsica, and Italy, (b) Crises, Past and Present. **6.0**, See **Prague.** **6.40**, Concert by a Peasant Orchestra, relayed from Radvanice. **7.40**, See **Prague.** **9.15** (approx.), Close Down.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—**4.0 p.m.**, News. **4.10**, Announcements. **4.30**, Concert. **5.30**, Relay from a Foreign Station. **8.0**, Talk in English: The Doctrine of Marx and Lenin. **8.55**, Time. **9.5**, Press Review.

MOTALA.—See **Stockholm.**

MUHLACKER.—See **Stuttgart.**

MUNICH

533 metres; 60 kW. Relayed by **Augsburg** and **Kaiserslautern, 560 metres**, and **Nürnberg, 239 metres.**—**3.20 p.m.**, Recital of Operatic Arias by Luise Wirtensohn (Soprano), Edel Liesl Neuer (Contralto), and Max Peter (Bass): Two Songs for Soprano (Puccini): (a) Aria from Suor Angelica, (b) Aria from Gianni Schicchi; Contralto Solo: Magdalena's Song from Der Evangelimann (Kienzl); Bass Solo: Falstaff's Drinking Song from The Merry Wives of Windsor (Nicolai). **3.40**, Conversations Overheard—a Week-End among Ski-ers. **4.0**, See **Langenberg.** **5.15**, The Death Vigil in Bayreuth—a Description based on Contemporary Documents (Meiegesses). **5.35**, Talk: The Mystics. **5.55**, Time, Weather and Agricultural Notes. **6.0**, Talk: A Tragic Friendship—Wagner and Nietzsche (Eugen Gürster). **6.25** (from **Nürnberg**), Concert by the Nürnberg-Fürth Police Band, conducted by Franz Jarosch. **7.40**, Talk. **8.0**, Act III of Tristan und Isolde—Opera (Wagner). **9.20**, Time, Weather, News and Sports Notes. **9.45**, Serenade, conducted by Erich Kloss. **11.0** (approx.), Close Down.

NAPLES.—See **Rome.**

NOTODDEN.—See **Oslo.**

OSLO

1,083 metres; 60 kW. Relayed by **Fredrikstad, 365.8 metres**; **Hamar, 574.7 metres**; **Notodden, 447.1 metres**; **Porsgrund, 453.3 metres**; and **Rjukan, 447.1 metres.**—**4.15 p.m.**, Accordion Music. **5.0**, German Lesson. **5.30**, Pianoforte Recital by Mlle. I. Mikkelsen and M. Witkovsky, relayed from **Trondheim (405.8 metres)**: Andante con Variazione in B (Schumann); Sonetto del Petrarca in A (Liszt); Etude in C Sharp Minor, Op. 2 (Scriabin); Prelude in A Minor (Arensky); Etude in C (Glazounov). **6.0**, Announcements, Weather, and News. **6.30**, Political Review. **7.0**, Time Signal. **7.1**, Introductory Talk on the Following Transmission. **7.30**, See **Stockholm.** In the intervals at **8.25**, Topical Talk. **8.35**, Weather and News. **10.20** (approx.), Close Down.

OSTERSUND.—See **Stockholm.**

PALERMO

537.6 metres; 3 kW.—**7.0 p.m.**, Popolavoro Notes, Tourist Talk, Agricultural Notes, Report of the Royal Geographical Society and Giornale Radio. **7.20**, Light Music on Gramophone Records. **7.30**, Time and Announcements. **7.45**, Chamber Music Concert: Olga Nicastro (Pianoforte), M. Diamante (Flute), Hella Helt Di Gregorio (Soprano).

and Cimmo (Baritone); Pianoforte Solo: Faschings-schwank aus Wien (Schumann); Suite for Flute (Ronssel); Soprano Solos: (a) Serenade (Brahms), (b) Shadow Dance from Dinorah (Meyerbeer); Baritone Solos: (a) Liebeslied (Brahms), (b) Per mi giunto from Don Carlos (Verdi); Variations for Flute and Pianoforte, Profili musicali (La Rosa Parodi), the Composer at the Pianoforte; Soprano Solos: (a) Focca la neve (Cimara), (b) Serenata d'inverno (Bettinelli); Baritone Solos: (a) Ferito prigionier from Germania (Franchetti). (b) Fleeting Vision from Hérodiade (Massenet); Pianoforte Solos: (a) Miller's Dance from The Three-Cornered Hat (Falla), (b) Concert Allegro (Granados). After the Concert, Light Music on Gramophone Records. 9.55, News Bulletin.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW. Time Signals (on **2,650 metres**) at **9.26 a.m.** and **10.26 p.m.** (Preliminary and 6-dot Signals).—**5.45 p.m.,** Le Journal Parlé. **7.20,** Weather Report. **7.30,** Audran Operetta Concert: Selection from Le Grand Mogol, La Poupée, and Miss Decima. **8.30,** Popular Programme with the Collaboration of Sim-Viva and Dalio. **9.0** (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—**6.45 p.m.,** Journal Parlé. **7.0,** Hot Jazz on Gramophone Records. **7.30,** Sponsored Concert. **8.0,** Talk by Dr. Ombredane. **8.5,** Motoring Notes. **8.15,** Interval. **8.30,** Sponsored Concerts. **10.40,** News.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—**6.45 a.m.,** Physical Culture. **7.30,** Weather and Physical Culture (contd.). **7.45,** Probable Relay of the Test Match from Australia. **8.0,** Press Review and Weather. **8.30,** Test Match Relay (contd.). **12 Noon,** Concert by the Radio Paris Orchestra: Overture, Norma (Bellini); Selection from Les Troyens à Carthage (Berlioz); Overture, A Life for the Czar (Glinka); Selection from Salammbo (Reyer). **12.30 to 1.0,** Interval. **1.0,** Exchange, News, and Weather. **1.5,** Song Recital by Mme. Gerö. **1.30,** Exchange. **1.35,** Orchestral Concert (contd.): Selection from A Midsummer Night's Dream (Mendelssohn) Selection from La Korrigane (Widor). **2.0,** Exchange and Announcements. **3.45,** Exchange and Market Prices. **6.10,** Agricultural Talk. **6.30,** Elementary English Lesson. **6.50,** Film Review. **7.0,** Review of New Books. **7.20,** Concert by the Radio Paris Orchestra: Gavotte (Czibulka); Selection from Polyphème (Cras); Soir d'été (Delmas); Waltz (Dvorák). **7.45,** Commercial Prices and News. **7.50,** Gardening Talk. **8.0,** Surcouf—Operetta (Planquette). In the intervals at **8.30,** News, Sports Notes, and Weather. At **8.40,** Review by Paul Reboux; and at **9.15,** Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW. Relayed by **W8XK** on **48.86 metres** and **25.27 metres.**—**9.0 p.m.,** Work-a-day Thoughts. **9.5,** Business News. **9.15,** Programme to be announced. **9.30,** Weather Report. **9.32,** Market Report. **9.45,** Pianoforte Interlude. **9.50,** David Lawrence Dispatch. **9.55** KDKA Artist Bulletin. **9.57,** Programme Announcements. **10.0,** Programme to be announced. **10.30,** The Singing Lady, from **New York.** **10.45,** Little Orphan Annie. **11.0,** Our Daily Food—Maude and Cousin Bill, from **New York.** **11.15,** Time Signal. **11.16,** Temperature Report. **11.17,** Teaberry Sport Review. **11.22,** Press News Reeler. **11.27,** Strange Facts. **11.29,** Weather Report. **11.30,** Westinghouse Watchmen. **11.45 to 3.15 a.m. (Tuesday),** **New York** Relay. **11.45,** To-day's News by Lowell Thomas. **12.0 Midnight,** Pepsodent Amos 'n' Andy. **12.15 a.m.,** Tastyeast Jesters. **12.30,** Five Star Theatre by the Marx Brothers. **1.0,** Cliquot Club Eskimos. **1.30,** Time Signal and Don Carney—a Talk for Dog Lovers. **1.45,** Phillips Lord in The Country Doctor. **2.0,** Sinclair Minstrels. **2.30,** Jack Frost Melody Moments. **3.0,** Alice Joy. **3.15,** Bridge School of the Air by E. Hall Downes. **3.30,** Samuel Di Primio (Tenor). **3.45,** Bradley Kincaid. **4.0,** Time Signal. **4.1,** Teaberry Sport Review. **4.11,** Temperature Report. **4.12,** Weather Report. **4.13,** KDKA Artist Bulletin. **4.15,** Press Last Minute News. **4.20,** Henry Halstead and his Californians. **5.0,** Hotel Bismarck Orchestra, from **New York.** **5.30,** Time Signal and Good-night.

PORSGRUND.—See **Oslo.**

POZNAN

335 metres; 1.9 kW.—**4.40 p.m.,** See **Cracow.** **5.0,** See **Warsaw.** **6.20,** Miscellaneous Items and News. **6.40,** Talk from **Cracow.** **6.45,** Opera Relay from **Warsaw.** In the interval at **9.30,** Time, Sports Notes and Police Announcements. **9.50** (approx.), Close Down.

PRAGUE

488.6 metres; 120 kW.—**3.10 p.m.,** See **Bratislava.** **4.10,** Talk: Organised Attacks against Wireless Interference. **4.20,** Talk on Books. **4.30,** Programme for Children. **4.50,** Popular Music on Gramophone Records. **5.5,** Agricultural Report. **5.15,** Talk for Workers. **5.25,** News in German. **5.30,** German Transmission: Two Talks: (a) Richard Wagner at Marienbad, (b) German Gymnastic Societies. **6.0,** News. **6.5,** Elementary English Lesson. **6.20,** Shorthand Lesson. **6.40,** See **Brno.** **7.40,** Talk: Richard Wagner. **8.0,** Time Signal. **8.1,** Wagner Memorial Concert on the Fiftieth Anniversary of his Death. The Station Orchestra, conducted by Otakar Jeremias. Overture, Das Liebesverbot; Symphony in C. **9.0,** Time Signal. **9.1,** News Bulletin. **9.15** (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; **LAUSANNE, 680 metres;** and **GENEVA, 760 metres.**—**5.30 p.m.** (from **Lausanne**). German Lesson. **6.0** (from **Lausanne**). Weather, News, and Announcements. **6.30** (from **Lausanne**). Talk for Apprentices: Wood-cutting Machines. **7.0** (from **Geneva**). French Song Recital by Mme. Betty Primor. **7.20,** Concert by the Station Orchestra. **8.0** (from **Lausanne**), The Joys of Housework—Musical Sketch. **9.0,** News Bulletin and Weather Forecast. **9.10** (from **Geneva**). Talk: The Work of the League of Nations. **9.25** (approx.), Close Down.

RIGA

525 metres; 15 kW.—**6.5 p.m.,** Wagner Memorial Concert, relayed from the National Opera. Conductor: Albert Coates. Overture, Die Feen; Selection from The Valkyries; Prelude to Act II, Dance of the Apprentices and Trial Scene from The Mastersingers; Prelude to Parsifal; Siegfried's Idyll; Siegfried's Journey; Funeral March from Götterdämmerung (The Twilight of the Gods). In the interval at **7.0,** and after the Concert, News. **8.0,** Weather Forecast followed by Light Music. **9.30** (approx.), Close Down.

RJUKAN.—See **Oslo.**

ROME

Call 1RO, 441 metres; 50 kW. Relayed by **Naples, 319 metres,** and **2RO, 25.4 metres.**—**7.0 a.m.,** Gymnastics. **7.15 to 7.30 a.m.,** Giornale Radio and Announcements. **11.30,** Weather and Light Music on Gramophone Records. **12 Noon,** Time and Announcements. **12.2 to 1.15 p.m.,** Orchestral Concert. In the interval from **12.30 to 12.45,** Giornale Radio and Exchange. **3.45,** Children's Radio Review. **4.10,** Announcements. **4.15,** Exchange and Giornale Radio. **4.30,** Pianoforte Recital by Jean Wiener and Clement Doucet, relayed from the Royal Philharmonic Academy. **6.0,** Giornale Radio. **6.10 (Naples),** Shipping and Sports Notes. **6.15,** Agricultural Report and Announcements. **7.0,** Time, Announcements and Light Music on Gramophone Records. **7.30** Sports Notes and Tourist Report. **7.45** Symphony Concert in commemoration of the Fiftieth Anniversary of the Death of Wagner. Conductor: Rito Selvaggi. Concert Overture in D; Symphony in C; Faust Overture; Festival March; Talk: Tales of Yesterday and To-day—Wagner and d'Annunzio at Venice; Symphonic Poem, Polonia (Wagner); Forest Murmurs from Siegfried; Prelude to and Finale from Tristan and Isolde; Overture, Tannhäuser. News after the Concert.

SALZBURG.—See **Vienna.**

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 379.5 metres; 50 kW. Relayed at intervals by **W2XAF** on **31.48 metres,** and by **W2XAD** on **19.56 metres.**—**7.30 p.m.,** The Revolving Stage, from **New York.** **8.0,** Talk, from **New York.** **8.15,** Antionette Halstead (Contralto). **12 Midnight,** Jane Froman and her Band, from **New York.** **12.15 a.m. (Tuesday),** Stock Reports. **12.30** till Close Down, **New York** Relay. **12.30,** Melody Keepsakes. **12.45,** The Goldbergs. **1.0,** Socopyland Sketch. **1.30,** Voice of Firestone. **2.0,** A and P Gipsies. **2.30,** Buick Programme and Programme Resumé.

SCHWEIZERISCHER LANDESSENDER

BEROMUNSTER, 459 metres; 60 kW.; **BASLE, 244.1 metres,** and **BERNE, 245.9 metres.**—**11.28 a.m.,** Time Signal from Neuchâtel Observatory. **11.30,** Weather and News. **11.40,** Wind Instrument Music on Gramophone Records. **12.35 p.m.,** Weather and Exchange. **12.45 to 2.30,** Interval. **2.30,** Concert by the Radio Orchestra. **3.0,** Light Music on Gramophone Records. **3.30,** 'Cello Music on Gramophone Records. **4.0,** Handel Concert on Gramophone Records. **4.30,** Weather. **4.35 to 5.30,** Interval. **5.30** (from **Zürich**). Talk: The Swiss Dialect Theatre. **6.0,** Time and Weather. **6.15** (from **Zürich**), English Lesson. **6.45** (from **Zürich**), Wagner Concert on the Fiftieth Anniversary of his Death. The Augmented Radio Orchestra, conducted by H. Hofmann. **7.55** (from **Zürich**). Tenor Song Recital by Luis van Tulder, accompanied by the Radio Orchestra, conducted by H. Hofmann and O. Straus (Pianoforte). **8.30,** Weather and News. **8.40,** Dance Music, Old and New by the Radio Orchestra. **9.15** (approx.), Close Down.

SEVILLE

368.1 metres; 1.5 kW.—**2.0 p.m.,** Concert by the Station Orchestra: Pasodoble, Arriba, Maño! (Rubio); Romance for Violin and Pianoforte (Calvo); Titin (Sene); Selection from Los Calabreses (Luna). **9.0,** Concert. Part I—Orchestral Music: Prelude, El Caserio (Guridi); Vocalise (Rachmaninov); Waltz from Faust (Gounod); Peer Gynt Suite (Grieg): No. 1 (a) Morning, (b) Death of Ase, (c) Anitra's Dance, (d) In the Hall of the Mountain King; Goyescas (Granados); Turkish March (Mozart). Part II—Spanish Songs: Borrachita (Nacho); Amapola (Lacalle); Marion Delorme (Corner-Freixcas); Tango (Tupynamba); El pañuelo de lunares (Quintero-Alonso); Conconito (Mexican Song); Jurame (Grever); Jota aragonesa (Capdevila). Part III—Spanish Dances.

SOTTENS.—See **Radio-Suisse Romande.**

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by **Boden, 1,229.5 metres; Göteborg, 322 metres; Horby, 257 metres; Motala, 1,348 metres; Ostersund, 770 metres;** and **Sundsvall, 542 metres.**—**4.5 p.m.,** Folk Music. **4.30,** Reading. **5.0,** Light Music on Gramophone Records. **5.55,** Parliamentary Report. **6.15,** Weather and News. **6.30,** Popular Songs. **7.0,** Talk. **7.30,** Acts II and III of The Mastersingers—Opera (Wagner), relayed from the Opera House. In the interval at **8.30,** Weather and News. **10.0** (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—**11.30 a.m.,** Variety Music on Gramophone Records. **12.45 p.m.,** News. **1.0,** Time and Exchange. **1.5,** Variety Music on Gramophone Records. **2.0 to 4.45,** Interval. **4.45,** French Lesson. **5.0,** Orchestral Concert, conducted by M. Roskam: March, Toledo (Kalkman); Waltz, Faschingsboten (Fetras); 'Cello Solo, Overture, The Italian Girl in Algiers (Rossini); Selection from Martha (Flotow); Rose Mousse (Bosc); Badinage (Foudrain); Suite, At the Circus (Armandola). **6.0,** Film Review in French. **6.15,** Talk in German: The History of Alsace in the Eighteenth Century. **6.30,** Orchestral Concert of Italian Music, conducted by Maurice de Villers: Overture, William Tell (Rossini); Selection from La Traviata (Verdi); Prelude and Intermezzo from Cavalleria Rusticana (Mascagni); Selection from Manon Lescaut (Puccini); Dance of the Hours from La Gioconda (Ponchielli). **7.30,** Time and News. **7.45,** Jazz Music, conducted by M. Roskam. **8.25,** Lottery Results. **8.30,** Song and Pianoforte Recital by Charles and Madeleine Panzera, relayed from **Metz:** Three Airs (Mozart), (a) Aria from Figaro, (b) Serenade and Champagne Aria from Don Giovanni; Pianoforte Solos, (a) Prelude in E Minor (Mendelssohn), (b) Polonaise in E Flat (Chopin); Songs, (a) La caravane (Chausson), (b) La mer (Ropartz), (c) En Sourdine (Fauré), (d) La Vie Intérieure (Duparc); Pianoforte Solos, (a) Jeux d'eau (Ravel), (b) Cordoba (Albeniz), (c) Seguedillas (Albeniz); Airs from The Damnation of Faust (Berlioz): (a) Recitative and Mephistopheles' Song of the Flea, (b) Prelude to Act II and Flower Song, (c) Recitative and Serenade of Mephistopheles. **10.30** (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and **FREIBURG, 570 metres.**—**11.0 a.m.,** Concert of Music by Wagner's Contemporaries on Gramophone Records. **12.15 p.m.,** Time, News, Weather, and Programme Announcements. **12.30,** Concert from **Langenberg. 1.0 to 1.15,** Sponsored Gramophone Music. **1.30,** Spanish Lesson. **2.0 to 2.30,** Elementary English Lesson. **4.0,** See **Langenberg.** **4.50,** Time, Weather, and Market Prices. **5.0,** Talk: The Industrial Life of Germany—The Manufacture of Tools and Machines. **5.25,** Time and News. **5.35,** See **Breslau.** **6.0,** See **Frankfurt.** **6.25,** Radio Report on the International Ski-ing Championship in Innsbruck. **6.40,** Talk: Future Problems of Aviation. **7.5,** Wagner Concert on the Fiftieth Anniversary of the Composer's Death, relayed from **Ulm;** The Stuttgart Philharmonic Orchestra, conducted by Emil Kahn: Soloists: Felicie Hüni-Mihacsek (Soprano), Julius Pölzer (Tenor), and Paul Bender (Baritone); A Festival Overture, Monologue from The Mastersingers; Siegfried forges the Broken Sword from Siegfried; Ballad from the Flying Dutchman (Wagner); Entry of the Guests into the Wartburg from Tannhäuser; Siegfried Idyll; Duet from The Valkyries; Wotan's Farewell and Fire Magic from The Valkyries. **9.0,** Time, News, Weather, and Programme Announcements. **9.20,** Talk on Chess. **9.45,** See **Munich.** **11.0** (approx.), Close Down.

SUNDSVALL.—See **Stockholm.**

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—**5.30 p.m.,** Dance Music. **6.0,** News. **6.15,** Operetta Music. **6.30,** Suite, Scènes alsaciennes (Massenet). **6.45,** Light Music. **7.0,** Tourist Report. **7.15,** Horse Racing Results, Market Prices and News. **7.25,** Local News Bulletin. **7.30,** Operetta Music: Selection from The Geisha (Jones); Air from Kadubec (Yvain); Selection from Ciboulette (Hahn). **7.45,** Opera Music; Song at the Forge from Siegfried (Wagner); Si la rigueur et la vengeance, from La Juive (Halévy); Aria from The Valkyries (Wagner). **8.0,** Military Music. **8.15,** Extracts from Sound Films. **8.30,** A Cabaret Concert of Former Days. **9.0,** Chansonnettes. **9.15,** Argentine Music. **9.30,** Viennese Music. **10.0,** Opera Music: Aria from Manon (Massenet); Alfio's Aria from Cavalleria Rusticana (Mascagni); Aria from Rigoletto (Verdi). **10.15,** North African News. **10.30,** Concert for Listeners in Morocco: Waltz, The Blue Danube (Joh. Strauss); Aria, The Swallows, from Mignon (Thomas); Violin Solo: Allegretto (Boccherini); Le sang du Midi (Roder); Voilà le printemps (Marceau). **11.0,** Request Concert. **11.30,** Programme in English by the I.B.C. Variety Concert: The Wink of the Glad Old Eye; Will Anybody here have a Drink?; Murder in the Air; A Little of what you fancy; One of the Ruins; Daisy Bell; Are we to part like this. **12 Midnight,** Weather and Announcements. **12.5 a.m. (Tuesday),** Orchestral Music: Selection from The Three Bears (Coates); Petite Suite de Concert (Coleridge-Taylor); Dances from Henry VIII (German). **12.30** (approx.), Close Down.

TRIESTE

247.7 metres; 10 kW.—**4.30 p.m.** till Close Down. See **Turin.**

TRONDHEIM.—See **Oslo.**

TURIN

273.7 metres; 7 kW. Relayed by **Milan, 331.5 metres; Genoa, 312.8 metres;** and **Florence, 500.8 metres.**—**4.30 p.m.,** See **Rome.** **5.35,** Giornale Radio, Agricultural Report, and Dopolavoro Notes. **6.0,** Popular Music on Gramophone Records. **6.20,** Giornale Radio. **6.30,** Time Signal, Announcements, and Tourist Talk. **6.35,** Orchestral Concert, relayed from the Café Dante. **7.0,** Giornale Radio and Weather Forecast, followed by Gramophone Records. **7.45,** Wagner Commemoration. **8.30,** A Comedy. **9.0,** Orchestral Concert, conducted by Ugo Tansini: Overture, Iphigenia in Aulis (Glück); Pastoral Symphony (Tartini); Pensée poétique (Scassola); Minuet for Strings (Fino); Prelude to Act III of Santa poesia (Cortopassi); Tarantella capriccio Castellammare (Brunetti). **10.0,** Giornale Radio.

VATICAN CITY

19.84 metres (Morning) and **50.26 metres (Evening);** 10 kW.—**10.0 to 10.15 a.m.,** Religious Information in Italian. **7.0 to 7.15 p.m.,** Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by **Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 245.9 metres;** and **Salzburg, 218.5 metres.**—**3.35 p.m.,** Concert by the Bernhard Wolfsthal Orchestra: Overture, Light Cavalry (Suppé); Waltz, Golden Rain (Waldteufel); Potpourri, Boccaccio; Galanterien (Weninger); Potpourri, Was wir lieben (Ganglberger). **4.25,** Talk: Wagner in Dresden. **4.50,** Time, Weather and Programme Announcements. **5.0,** See **Liepzig.** In an interval at **6.25,** Report on the International Ski-ing Championship at Innsbruck. **9.25,** Announcements. **9.30,** See **Berlin (Witzleben).**

WARSAW

1,411 metres; 120 kW.—**10.58 a.m.,** Time Signal and Bugle Call from the Tower of St. Mary's Church, Cracow. **11.5,** Programme Announcements. **11.10,** Popular Music on Gramophone Records. **12.20 p.m.,** Weather Forecast. **12.25 to 2.10,** Interval. **2.10,** Announcements. **2.15,** Economic Notes. **2.25,** Traffic Report. **2.35,** Answers to Correspondents. **2.50,** Light Music on Gramophone Records. **3.25,** Elementary French Lesson. **3.40,** Talk on Economics. **4.0,** Light Music from the Italia Café. **4.30,** Topical Notes. **4.35,** Programme Announcements. **4.40,** Talk on Wagner relayed from **Cracow (312.8 metres).** **5.0,** Tristan and Isolde—Opera (Wagner), relayed from the Opera House, Dresden. Conductor, Richard Strauss. In the Intervals, Miscellaneous Items, Topical Talk, and Radio Journal. **9.30,** Answers to Technical Correspondence. **9.45,** Radio Journal. **9.55,** Sports Notes. **10.0,** Aviation Weather Report and Police Notes. **10.5,** Dance Music.

WILNO

563 metres; 16 kW.—**4.40 p.m.,** Talk on Wagner, relayed from **Cracow.** **5.0,** See **Leipzig.** In the interval at **6.35 p.m.,** Miscellaneous Notes. **11.0** (approx.), Close Down.

ZAGREB

307 metres; 0.75 kW.—**4.50 p.m.,** News Bulletin. **5.5,** Educational Talk. **6.30,** Introductory Talk to the following Transmission. **6.0,** The Mastersingers—Opera in Three Acts (Wagner), relayed from the National Theatre. In the intervals, News, Weather Forecast and Snow Report. **10.0** (approx.), Close Down.

ZURICH.—See **Schweizerischer Landessender.**

TUESDAY

FEBRUARY THE FOURTEENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL	Orchestral programme. Military Band concert. "Merry-go-Round," feature programme by C. Denis Freeman. Pianoforte recital.
LONDON REGIONAL	Concert from Houldsworth Hall, Manchester. Vaudeville programme. Orchestral concert.
MIDLAND REGIONAL	Orchestral concert. Choral concert. Military Band programme.
NORTH REGIONAL	Concert from Houldsworth Hall, Manchester. Orchestral and choral concert. Viola and pianoforte recital.
WEST REGIONAL	"Sea Sheen," orchestral programme. National programme.
SCOTTISH REGIONAL	Orchestral concert. "Foundations of Scottish Song." A talk by Mr. Thomas Henderson, with musical illustrations.
BELFAST	Light programme of gramophone records. Light Orchestral concert. Vaudeville programme.

ABROAD

BRUSSELS (No. 2)	The Radio Orchestra, conducted by C. Walpot.
HAMBURG	The Philharmonic Orchestra, conducted by Adolf Secker.
HUIZEN	Concert by Edith Lorand's Orchestra.
LANGENBERG	The Münster Orchestra, conducted by Werner Göhre.
LEIPZIG	The Dresden Philharmonic Orchestra.

ATHLONE

413 metres; 60 kW.; and **CORK, 224.4 metres.**—**1.30 to 2.0 p.m.,** Time Signal, Weather Report, Stock Report and Popular Music on Gramophone Records. **6.0,** Light Music on Gramophone Records. **6.15,** Programme for Children. **7.0,** Popular Music on Gramophone Records. **7.15,** News and British Market Report. **7.30,** Time Signal. **7.31,** Gaelic Talk. **7.45,** Talk: Careers for Girls. **8.0,** Concert by the Station Orchestra. **8.30,** Pianoforte Recital by Mai Johnson. **8.45,** Violin Duets by Mrs. Larchet and Mrs. Lange. **9.15,** The Station Orchestra. **9.45,** Soprano Solos by Josephine Curran. **10.0,** Orchestral Music. **10.30,** Time Signal, News, Weather Report and Close Down.

BARCELONA

RADIO-BARCELONA, Call EAJ1, 348.8 metres; 8 kW.—**6.0 p.m.,** Trio Concert. **7.0,** Request Gramophone Records. **7.30,** Exchange Quotations followed by Talk on Art. **8.0,** Popular Music on Gramophone Records. **8.15,** Football Notes, followed by Gramophone Records and News. **9.0,** Chimes from the Cathedral, Weather Forecast, Messages to Seamen, Exchange Quotations and Market Prices. **9.10,** An Opera relayed from the Gran Teatro del Liceo. **11.0** (in the interval), News. **12.0 Midnight** (approx.), Close Down.

BASLE.—See **Schweizerischer Landessender.**

BELGRADE

420.4 metres; 2.8 kW.—**3.0 p.m.,** Concert by the Radio Orchestra: Peasant Dance, No. 1 (Golemovic); Potpourri (Sedlacek); Suite, In der Walpurgisnacht (Lüling); Waltz Intermezzo, Nur wer die Sehnsucht kennt (Translateur); Selection from Mignon (Thomas). **4.0,** Popular Music on Gramophone Records. **5.55,** Time and Programme Announcements. **6.0,** Variety Music on Gramophone Records. **6.30,** Talk. **7.0,** Part Relay of Macbeth—Drama (Shakespeare) from **Zagreb (307 metres).** **9.0,** News, followed by Concert of Light Music from the Ratnicki Dom.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—**11.55 a.m.,** Nauen Time Signal. **12.35 p.m.,** News Bulletin. **1.0,** Gramophone Concert from **Berlin (Witzleben).** **2.0,** Programme for Children. **2.30,** Weather and Exchange. **2.45,** Reading (Maxim Ziese). **3.0,** Talk for Women. **3.30,** See **Leipzig.** **4.10,** Topical Talk. **4.30,** Kreislerianer—Fantasias, Op 16 (Schumann). **5.0,** Talk on Settlements. **5.30,** Dialogue: An Introduction to Beethoven's Eroica Symphony. **5.55,** Weather and Announcements. **6.0,** Talk: Greek Drama and the People of To-day—Sophocles' Electra. **6.30,** A Poem. **6.35,** Political Press Review. **7.0,** Concert from **Liepzig.** **8.0,** Talk: Soul and Intellect. **8.40,** Songs by Ludwig Spohr, for Voice, Clarinet, and two Pianofortes. **9.0,** Weather, News, and Sports Notes. **9.45,** Weather Report for Shipping. **10.0,** Concert from **Hamburg.** **11.0** (approx.), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—**6.0 p.m.,** Topical Talk. **6.10,** Talk: Relief for the Unemployed. **6.40,** Die Hochzeit (The Wedding)—A Fragment of an Opera (Wagner), relayed from the Academy of Music, with Introductory Talk, followed by Concert from the Eden Pavillon. **7.50,** Topical Talk. **8.0,** How to become a Racing Motorist—a Humorous Radio Play (Manfred von Brauchitsch), with Music by Walter Gronostay. **9.0,** Weather, News, and Sports Notes. **9.30,** See **Hamburg.** **11.0** (approx.), Close Down.

BERNE.—See **Schweizerischer Landessender.**

BEROMUNSTER. — See **Schweizerischer Landessender.**

BODEN.—See **Stockholm.**

BODO.—See **Oslo.**

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—**7.30 p.m.,** News and Exchange. **7.40,** Programme for Women. **7.55,** Lottery Results. **8.0,** Topical Talk. **8.15,** News and Weather. **8.30,** See **Paris (Eiffel Tower).**

BRATISLAVA

279 metres; 14 kW.—**4.20 p.m.,** Light Music on Gramophone Records. **5.5,** 'Cello Recital by G. Hahnova Minuet (Debussy); Romance, Op. 24 (Kamrath); Sonata in F, Op. 6 (Richard Strauss). **5.45,** Slovak Spelling Lesson. **5.55,** See **Prague.** **9.15,** Dance Music, relayed from the Carlton Café. **10.0** (approx.), Close Down.

BREMEN.—See **Hamburg.**

BRESLAU

325 metres; 60 kW.; and **GLEIWITZ, 253 metres.**—**12.5 p.m.,** Weather for Farmers. **12.10,** Gramophone Concert: Overture, Meeresstille und glückliche Fahrt (Mendelssohn); Andante cantabile (Tchaikovsky); Aria from The Mastersingers (Wagner); Aria from The Valkyries (Wagner); Selection from La boutique fantasque (Rossini-Respighi); Salut d'amour (Elgar). **12.45,** Time, Weather, News, and Exchange. **1.5,** Gramophone Concert: Overture, William Tell (Rossini); Selection from La vie Parisienne (Offenbach); So verliebt kann nur ein Ungar sein, from Der Teufelsreiter (Kálmán); Selection from The Circus Princess (Kálmán). **1.45,** Sponsored Programme with Gramophone Records. **2.10,** Programme for Children. **3.10,** Vocal and Instrumental Concert: Kert Reich (Bass), Herta Matzke-Schreiter (Violin), and Hanna Norn (Pianoforte): Fantasia in D Minor (Mozart): Songs (Schubert): (a) Der Tod und das Mädchen, (b) Sei mir gegrüsst, (c) Auf dem Wasser zu singen; Romance, Op. 60 (Leonhard-Marteau); Nocturne, Op. 27, No. 2 (Chopin-Wilhelmi); Rondo in D (Mozart); Two Pieces (Rachmaninov); Elégie (Massenet); Spanish Dance, No. 1 (Sarasate); Gipsy Dances, Op. 14, No. 2 (Nachez); Intermezzos, Nos. 1 and 2 (Brahms). **4.10,** Book Review. **4.30,** Agricultural Prices, followed by Reading. **5.0,** Programme to be announced. **5.40,** Talk: Gobineau's Influence on Wagner's Philosophy. **6.10,** Wireless Notes. **6.20,** Light Music on Gramophone Records. In the interval at **6.35,** Weather for Farmers. **7.0,** The Circus — Arabesque (Marianne Brnus), Music by Hermann Zanke and Günther Krauseneck. **7.40,** Wagner in the Judgment of his fellows—Readings from Contemporary Documents. **8.0,** Variety Programme from **Munich.** **9.0,** Time, Weather, News, Sports Notes, and Programme Announcements. **9.30,** Political Newspaper Review. **9.55,** Theatre Talk. **10.10,** Waltzes on Gramophone Records. **10.30,** Dance Music, relayed from **London.** **12 Midnight,** Close Down.

BRNO

342 metres; 35 kW.—**4.50 p.m.,** Esperanto Lesson. **5.0,** Talk on Music. **5.15,** Talk for Workers. **5.25,** German Transmission: News, Educational Talk and Agricultural Report. **5.55,** See **Prague.** **10.0** (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R.; 509 metres; 15 kW.—**12 Noon,** Concert by the Small Station Orchestra, conducted by P. Leemans. Part One—Viennese Music: Selection from (a) The Dance of the Dragonflies (Lehar), (b) The Merry Peasant (Fall), (c) Katja the Dancer (Gilbert), and (d) The Chocolate Soldier (O. Straus). Part Two—Music by G. Brenta: Nocturne; Berceuse for Violin and Pianoforte; Impromptu in B Flat; Concert Etude; Chevauché fantastique. **1.0 p.m.,** Le Journal Parlé. **1.10,** Four German Dances (Mozart) on Gramophone Records. **1.20,** Pianoforte Recital by Mme. Sironval: Soupir (Liszt); Prelude (Rachmaninov); General Lavine Eccentric (Debussy). **1.40,** Mozart's Minuets on Gramophone Records: Minuet; Minuet from the Symphony No. 40; Minuet from the Clarinet Quintet in A; Minuet from the Quartet in G; Menuetto allegretto from the Sixth Quartet. **5.0,** Symphony No. 2 (Brahms) by the Symphony Orchestra, conducted by Jean Kumps. **5.30,** Programme for Children. **6.5,** Literary Review. **6.15,** German Dances (Schubert) on Gramophone Records. **6.30,** Concert of Descriptive Music by the Small Station Orchestra, conducted by P. Leemans: The Butterfly Chase (Kéler-Béla); Violin Solo: Die Biene (Schubert); Musical Box and Pianola (Antiga); Kitten on the keys (Confrey); Le concon (Daquin); Pianoforte Solo: La poule (Rameau); Flute Solo, Le merle blanc (Damaré); The Mill in the Black Forest (Eilenberg); Humorous Pieces (Leonard); The Clock and the Dresden Figures (Ketelbey). **7.15,** Weekly Review, by M. Picard. **7.30,** Talk for Women. **8.0,** Concert by the Verviers Musical Club, relayed from Verviers. Soloist: Mlle. Cécile Viance (Songs). Part One—Walloon Music: Epithalame (Johin); La Bancée du Timbalier (Houdret); Aria, Minuet and Pastorale (Masseau). **8.45,** Talk: The Belgian Colonies. **9.0,** Concert (contd.) Part Two—Popular Music: Overture, La fuite en Egypte (Berlioz); Songs: (a) Sur une tombe (Lekeu), (b) Myrtha (Radoux); Symphony No. 39 (Mozart). **10.0,** Le Journal Parlé.

BRUSSELS (No. 2)

N.I.R.; 338.2 metres; 15 kW. Programme in Flemish.—**12 Noon,** Gramophone Concert of Music from Sound Films. **1.0 p.m.,** Le Journal Parlé. **1.10,** Concert by the Small Station Orchestra, conducted by P. Leemans: March (Ross); Waltz, Die Schönen von Valencia (Morena); Moon of Love (Wood); Selection from Ciboulette (Hahn); Gramophone Records: Airs from Acts II and III of Turandot (Puccini); Foxtrot, Singapore (José); Tango, Du schwarzer Zigeuner (Vacek); Selection from Der Zigeunerprimas (Kalman). **5.0,** Concert by the Radio Orchestra, conducted by Charles Walpot: Overture, The Bohemian Girl (Balfe); Selection from Lilac Time (Schubert-Berté); Waltz, Roses from the South (Joh. Strauss); Ballet Suite (Kalman). **5.45,** Programme for Children. **6.30,** Symphonic Suite, Scheherazade (Rimsky-Korsakov) on Gramophone Records. **7.15,** Reading (Lode Zielens). **7.30,** Tourist Report. **8.0,** Concert by the Radio Orchestra, conducted by Charles Walpot. Soloists: Mme. Krinkels (Songs), L. Durant (Trumpet), and Gason (Saxophone). Selection from Frederica (Lehar); Saxophone Solo: Waltz, Etoilerie (Haenecour); Ode to my Saxophone (Hullebroeck); Three Songs; Trumpet Solo: Souvenirs de l'Angleterre (Goyens); Fantasia on Negro Spirituals (Foulds); Le jeu des poupées de Savoy (Lotte and Alex Wins). **9.10,** Concert by the Symphony Orchestra, conducted by Jean Kumps. Soloist: Mme. Krinkels (Songs). Overture, Ruy Blas (Mendelssohn); Flemish Rhapsody (Brassdmans); Songs: (a) Aria from The Golden Cockerel (Rimsky-Korsakov), (b) Berceuse (Gretchaninov); Scènes Breugholiennes (Brassmans); Selection from Phèdre (Massenet). **10.0,** Journal Parlé. **10.10,** Gramophone Concert: Selection from The Gipsy Princess (Kalman); Im Traum hast du mir alles erlaubt (Heymann); Air (Heymann); Tango, Rio de Janeiro (May); Selection from The Dollar Princess (Fall); Selection from Frau Luna (Lincke); Waltz, I'll believe in Love (Katscher); Tango, Tell me I'm forgiven (Katscher); Waltz, Gold and Silver (Lehar); Waltz, The Blue Danube (Joh. Strauss); Tango, O Fränein Grete (Llossas); Schenk mir eine Tafel Schokolade (Schwartz); Selection from Die Fledermaus (Joh. Strauss). **11.0** (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—**4.0 p.m.,** Concert of Light Music and Romanian Music by the Motzoi Orchestra. **5.0,** News and Time Signal. **5.10,** Talk. **5.25,** Concert by the Moitzoi Orchestra (contd.). **6.0,** Talk on Romania. **6.40,** Light Music on Gramophone Records. **7.0,** Wagner Concert by the Radio Orchestra, conducted by Michael Jora: Prelude to Lohengrin; Elizabeth's Aria from Tannhäuser (Wagner); Prelude to the Third Act of The Mastersingers; Wotan's Farewell and Fire Magic from the Valkyries. **8.0,** Talk. **8.15,** Concert (contd.): Siegfried Idyl; Overture, Rienzi. **8.45,** News Bulletin.

BUDAPEST

550 metres; 18.5 kW. Also relayed on **840 metres** from **6.25 to 11.0 p.m.**—**4.0 p.m.,** Concert by the Budapest Concert Orchestra, conducted by T. Polgár. Humoresque, Fasching (Weiner); Suite, The Arabian Nights (Borkiewicz); Humoresque (Kördögh); Song (Siklos); Hungarian Folk Songs (Orszaghy). **5.0,** French Lesson. **5.30,** Gramophone Records of Jack Hylton and his Band: Sailing on the old Moon; A Bungalow, a Piccolo, and You; Marry Me; Say it isn't so; Paradise; They all start whistling Mary; And then we'll have some more; Just Friends; Song; Marching along together. **6.0,** Talk. **6.30,** Lohengrin—Opera (Wagner), relayed from the Royal Hungarian Opera House. News in the intervals. **9.30,** Cigány Music by Imre Magyari and his Band from the Hotel Hungaria. **11.0** (approx.), Close Down.

CASSEL.—See **Frankfurt.**

COPENHAGEN

281 metres; 0.75 kW.; and **KALUNDBORG, 1,153 metres;** 7.5 kW.—**11.0 a.m.,** Time and Chimes from the Town Hall. **11.5,** String Ensemble Concert, conducted by Harald Andersen, relayed from the Bellevue Strandhotel. **1.0 to 2.0 p.m.,** Interval. **2.0,** Concert by the Radio Orchestra, conducted by Launy Gröndahl: Soloist, Elsa Sigfuss (Songs): Overture, Gillette de Narbonne (Audran); Waltz (Gungl); Fantasia on Venetian Folk Songs (Reesen); Selection from Iolanthe (Tchaikovsky); Oriental March from Aladdin (Agersnap); Songs; Overture, The Maid of Orleans (Söderman); Waltz, Hofballtänze (Joh. Strauss, Senr.); Ballet Music from William Tell (Rossini); Chant du Soir (Hansen); Fantasia on Bellman's Music (Ramsoe); March (Dupuy). **4.0,** Programme for Children. **4.40,** Exchange and Fish Market Prices. **4.50,** Agricultural Talk. **5.20,** German Lesson. **5.50,** Weather Forecast. **6.0,** News. **6.15,** Time Signal. **6.30,** Concert relayed from the Odd Fellow Hall: The Philharmonic Orchestra, conducted by Georg Hoeberg, and a Mixed Choir—Nordisk Festpraeludium for Orchestra and Mixed Choir (Hoeberg); Reading; Five Scandinavian Songs (arr. Axel Jud). **8.15,** Talk on Danish Art. **8.45,** News. **9.0,** Concert of Operetta Music by the Radio Orchestra, conducted by Emil Reesen: Overture (Offenbach-Binder); Selection from Mam'selle Nitouche (Hervé); Waltz from Cousin Bobby (Millöcker); Dance from The Student Duchess (Fall); Selection from Phi-Phi (Christiné); Overture, Gipsy Love (Lehár). **9.45,** Dance Music from Nimb's Restaurant. In the interval at **11.0,** Time and Chimes from the Town Hall. **11.30** (approx.), Close Down.

CORK.—See **Dublin.**

DANZIG.—See **Heilsberg.**

DRESDEN.—See **Leipzig.**

DUBLIN.—See **Athlone.**

FECAMP

223 metres; 10 kW.—**6.0 to 7.0 p.m.,** Programme in English by the I.B.C., C. Danvers Walker announcing.—**6.0,** Concert for Worthy Listeners: Songs and Instrumental Trios; Old Time Jigs and Reels; Songs: (a) Came Darling, (b) Home, (c) Only a Rose (Friml); Turkey in the Straw; Songs: (a) Marta, (b) Save the Last Dance for me, (c) Song of the Vagabonds (Friml). **6.30,** Concert for Bognor Listeners: Pianoforte Recital; Rhythm Selection; A Bench in the Park; You, just wonderful you; Selection from Words and Music (Noel Coward); Just hummin' along; Some more Rhythm; Swingin' in a Hammock. **7.10,** Programme to be announced. **10.0** till Close Down: Programme in English by the I.B.C. **10.0,** Dance Music. **11.0,** Military Band Concert: Overture, Rienzi (Wagner); El Abanico (Javaloyes); La Grive (Cole); Light of Foot (Latann); Pomp and Circumstance (Elgar); A Frangesa (Costa); Here, there and everywhere (Bosc). **11.30,** Opera Music

Selection from La Traviata (Verdi); Songs: (a) Qui sidegno non s'accende, from The Magic Flute (Mozart), (b) Largo al factotum, from The Barber of Seville (Rossini); Selection from Rigoletto (Verdi); Songs: (a) Mon piu Andria from Figaro (Mozart), (b) Vulcan's Song from Philémon et Baucis (Gounod). **12 Midnight,** Variety Programme: Song: Rhapsody in Love (Williams); I'd rather not (Gallagher); Accordion Solo: March joyeuse (Auvelier); Song: I am the Words (de Sylva); Accordion Solo: Annette (Phillyse); Silly Dick; Song: Little White Lies (Donaldson); Whistling Solo: Il Bacio. **12.30 a.m. (Wednesday),** American Songs: I don't work for a living; I'm gonna yodel my way to Heaven; Fortunes galore; Can't we talk it over; Hallelujah, I'm a Bum; They cut down the Old Pine Tree; The Railroad Boomer; Dinah. **1.0,** Music by an Accordion Band: Javanette (Bozi); Marche Volante (Alexander); The Waltz that made you mine; Senorita (Alexander); Lullaby of the Leaves (Young); Bertina Waltz; 'Leven Pounds of Heaven (Malneck). **1.30,** Light Music Only for you (Wieberg); A Banjo Song (Homer); My Song of the Hill (Meyer); Wid de Moon, Moon, Moon; Mammy is gone (Henderson) Since you went away (Johnson); Just keepin' on (Carter); Lonesome Moonlight (Strickland). **2.0,** Dance Music. **2.57,** I.B.C. Good-night Melody. **3.0** (approx.), Close Down.

FLENSBURG.—See **Hamburg.**

FLORENCE.—See **Turin.**

FRANKFURT

259 metres; 17 kW.; and **CASSEL, 245.9 metres.—4.0 p.m.,** See **Langenberg. 5.15,** Exchange Quotations. **5.25,** Talk. Wholesale and Retail Trade. **5.50,** Talk: Wages in other Countries. **6.15,** Time, Programme Announcements, Weather and Exchange. **6.30,** Concert by the Worms Chamber Music Society, relayed from **Worms:** Sonata in G Minor for Oboe, Bassoon and Harpsichord (Telemann); Conversation galante et amusante for Flute, Violin, 'Cello and Basso continuo (Guilemain). **7.0,** The Death of Richard Wagner—A Radio Picture (Johann Peter Konrad). **8.0,** Die Winterreise—Song Cycle (Schubert), by Hermann Scherz. **9.15,** Time, News, Weather and Sports Notes. **9.30,** Concert from **Hamburg.**

FREDRIKSSTAD. See **Oslo.**

FREIBURG.—See **Stuttgart.**

GENEVA.—See **Radio-Suisse Romande.**

GENOA.—See **Turin.**

GLEIWITZ.—See **Breslau.**

GOTEBORG.—See **Stockholm.**

GRAZ.—See **Vienna.**

HAMAR.—See **Oslo.**

HAMBURG

Call ha (in Morse), **372 metres;** 1.5 kW. Relayed by **Bremen, 269.8 metres; Flensburg, 227.4 metres; Hanover, 566 metres;** and **Kiel, 232.2 metres.—4.55 p.m.,** Unknown Emsland—Literary and Musical Programme in Dialect. **5.55,** Exchange and Market Prices. **6.0,** Talk: The Fruit and Vegetable Industry. **6.25,** Weather Forecast. **6.30,** Pianoforte Recital by Willy Graney: Three Pieces (Brahms), (a) Rhapsody in G Minor, (b) Intermezzo in F, (c) Caprice in B Minor; Two Studies (Chopin), (a) in G Flat, (b) in C Minor; Tarantella in G Minor (Liszt). **7.0** (from **Bremen**), Symphony Concert by the Bremen Concert Society, relayed from the Glocke: Soloist, Paul Gümmer (Baritone); Symphony No. 104 in D (Haydn); Cantata for Baritone and Chamber Orchestra, Es ist mir leid um dich, mein Bruder Jonathan (Höffer). **8.0,** See **Munich. 9.0,** Time, Weather, Announcements, Sports Notes, and Police Report. **9.20,** Topical Talk. **9.30,** Concert by the Hamburg Philharmonic Orchestra, conducted by Adolf Secker: Italian Caprice (Tchaikovsky); Irish Rhapsody (Stanford); Elegy (Massenet); Two Symphonic Poems (Schultze-Biesantz), (a) Der Glücksritter, (b) Komischer Trauermarsch; Tetuan, a Ride in the Desert, from the Moorish Rhapsody (Humperdinck); Three Pieces for String Orchestra (Purcell); Polkina (Reesen); Entry March of the Boyards (Halvorsen); Waltz, Wiener Blut (Joh. Strauss). In the interval at **10.20,** Ice Report.

HANOVER.—See **Hamburg.**

HEILSBERG

276.5 metres; 60 kW.; and **DANZIG, 453.2 metres.—12.5 p.m.,** Gramophone Concert of German Opera Music: Overture, Oberon (Weber); Alles teile unser Glück, from Stradella (Flotow); Overture, The Barber of Bagdad (Cornelius); Prelude to Lohengrin (Wagner); Duet, Das süsse Lied verhallt; Selection from Czar and Carpenter (Lortzing); Overture, The Magic Flute (Mozart); Soprano and Baritone Duet, Bei Männern, welche Liebe fühlen; Song from Martha; Overture, Der Waffenschmied (Lortzing); Song, Auch ich war ein Jüngling mit lockigem Haar; Overture, Fidelio (Beethoven). In the interval at **12.20,** News. **1.30,** Sponsored Programme with Gramophone Records. **2.0,** Agricultural Prices and Exchange Rates. **2.30,** Musical Programme for Children. **3.0,** Concert by the Small Station Orchestra, conducted by Eugen Wilcken: Soloists, Eugen Wilcken (Violin): Prelude to the Third Act of The Cricket on the Hearth (Goldmark); Intermezzo (R. Strauss); Mariä Wiegenlied (Reger); Selection from Little Ida's Flowers (Kleman); Violin Solos, (a) Nocturn (Mraczek), (b) Valse joyeuse (Provaczuik); Selection from André Chénier (Giordano); Overture, Poet and Peasant (Suppé); Selection from Lilac Time (Schubert-Berté); Overture, Eine Nacht in Venedig (Joh. Strauss). **4.45,** Book Review. **5.15,** Agricultural Prices. **5.20,** Ice Report. **5.30,** Talk for Workers. **5.55,** Shorthand Dictation. **6.20,** Chamber Music by Gerhard Rüchel (Violin), Margarete Schuchmann (Harpsichord and Pianoforte): Sonata in C Minor (Telemann); Sonata in B Minor, Op. 3, No. 4 (Corelli); Sonata in G (Haydn) **6.50,** Weather and News. **7.0** (from **Danzig**), Variety Programme. **8.15,** Richard Wagner in Court—Radio Play (Adolf Raskin). **9.15,** Weather, News, and Sports Notes.

HILVERSUM

Announced **HUIZEN; 296.1 metres;** 20 kW. (7 kW. up to **4.40 p.m.**). Programme of the Catholic Radio Society (K.R.O.).—**11.55 a.m.,** Concert by the K.R.O. Sextet: Unterm Freiheitsstern (Blankenburg); Song (Löhr); Künstlerleben (Joh. Strauss); Aubade printanière (Lacome); Selection from Rigoletto (Verdi); Sérénade diabolica (Cerri). **12.40 p.m.,** Popular Music on Gramophone Records. **12.55,** Sextet Concert (contd.): Potpourri—from Heidelberg to Barcelona (Borchert); Goblin Shadows (Rayners); Liebswalzer (Moszkovski); Murmelndes Lüftchen (Jansen); Finale. **1.25 to 1.40,** Interval. **1.40,** Educational Programme. **2.15,** Talk for Women. **3.10,** Dressmaking Lesson. **3.40,** Millinery Lesson. **4.10,** Concert by the K.R.O. Orchestra, conducted by **J.** Gerritsen: Festjubel (Blankenburg); Selection from Casanova (Lincke); Modern Ballet Suite (Armandola); Liebeswalzer (Moszkovski); Selection from Countess Maritza (Kálmán); Frühling am Mühlbach (Zimmer); Gipsy March (Star). **5.10,** Quartet Concert. N. Jameson (Violin), B. Volmer (Violin), G. Berlage (Viola), and H. Jamieson ('Cello): Quartet in B Flat, Op. 76, No. 4 (Haydn); Quartet in C (Haydn). **6.30,** Light Music on Gramophone Records. **6.50,** Talk. **7.10,** Police Notes. **7.25,** Talk. **7.40,** Concert by the Sursum Corda Orchestra and the Orpheus Male Voice Choir: Hoch Heideckesburg (Bielen); Overture, Heimkehr aus der Fremde (Mendelssohn); Hymn (Fauré); Selection from Aïda (Verdi-Bielen); Choir: (a) Vale Carissima (Kaun), (b) Ave Maria (Van de Putten), (c) De Ruine; Brandts Buys. **8.40,** News Bulletin. **8.45,** Dramatic Programme by the Vereenigde Haagsche Spelers. **9.5,** Concert (contd.): Aufzug der Stadtwache (Bielen); Overture, Orpheus in the Underworld (Offenbach-Bielen); Ein Melodientraum (Bielen); Choir: Ossoan (Bechmit); Fuhrmannslied (Moldenhauer); Choir and Orchestra: Waltz from Thérèse (Faust). **10.5,** Dramatic Programme. **10.25,** Popular Music on Gramophone Records. **10.40,** News. **10.45,** Light Music on Gramophone Records. **11.40** (approx.), Close Down.

HORBY.—See **Stockholm.**

HUIZEN

Announced **HILVERSUM, 1,875 metres;** 8.5 kW. Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.).—**11.40 a.m.,** Time Signal. **11.41,** Concert by the Wireless Orchestra, conducted by Nico Treep: Overture, The Barber of Seville (Rossini); Ballet Music from Faust (Gounod); Waltz, Nachtschwärmer (Ziehrer); Interlude, Gramophone Records: Selection from Manon Lescaut (Puccini); Lolita (Bucci-Peccia); Adoration (Filipucci); Puppenspiele (Lederer); Interlude; Gramophone Records: A Fête in Aranjuez (Demerssceman); Amoureuse (Berger); Blumenkorso (Siede); Pour un baiser (Tosti); March (Grieg). **1.55 to 2.10,** Interval. **2.10,** Orchestral Concert (contd.): Major and Minor (Schreiner); Selection from Gri-Gri (Lincke). **2.40,** Talk. **3.40,** Light Music on Gramophone Records. **4.10,** Concert by a Children's Choir, conducted by Jacob Hamel. **4.40,** Programme for Children. **5.10,** Talk. **5.40,** Concert by the Wireless Orchestra, conducted by Nico Treep: March, Hoch Heideckesburg (Herzer); Overture, Das Nachtlager in Granada (Kreutzer); Selection from Surcouf (Planquette-Hubans); Leichtes Blut (Joh. Strauss). **6.10,** Talk. **6.40,** Concert (contd.), Donausagen (Fucik); Good Night Vienna (Posford-Finck); Melody (Percy); Oh, Desdemona (Percy); Blaze of Glory (Holzmann). **7.10,** English Lesson. **7.40,** Time Signal. **7.41,** News. **7.45,** Light Music on Gramophone Records. **7.55,** Concert by Edith Lorand's Orchestra: Marche militaire No. 1 (Schubert-Mikuliez); Rondo from the Haffner Serenade (Mozart); Waltz, Op. 64, No. 2 (Chopin); Minuet (Beethoven); Zigeunerweisen (Sarasate); Scherzo from A Midsummer Night's Dream (Mendelssohn); Polovtsian Dances from Prince Igor (Borodin); Gopak (Mussorgski); Clabelitos (Valverde); Polka from Schwanda the Piper (Weinberger). **8.55,** Light Music on Gramophone Records. **9.10,** Variety Programme: Kovacs Lajos' Orchestra, Bob Scholte, A.V.R.O. Girls and Soloists. **10.10,** Concert of Light Music by the Kovacs Jajos' Orchestra. **10.40,** News. **10.45,** Light Music on Gramophone Records. **11.40** (approx), Close Down.

INNSBRUCK.—See **Vienna.**

KALUNDBORG.—See **Copenhagen.**

KATOWICE

408 metres; 16 kW.—**3.5 p.m.,** Popular Music on Gramophone Records. **3.25,** See **Warsaw. 6.0,** Recitations (Galuszka). **6.10,** Announcements and Popular Music on Gramophone Records. **6.25,** Sports Notes. **6.30,** See **Warsaw. 10.0,** Dance Music.

KIEL.—See **Hamburg.**

KLAGENFURT.—See **Vienna.**

KOSICE.—See **Prague.**

LAHTI

1,796 metres; 40 kW.; and **HELSINKI, 368.1 metres.—6.5 p.m.,** Concert by the Radio Orchestra, conducted by Toivo Haapanen, relayed from the Conservatoire. Soloist, Kerttu Bernhard (Pianoforte). Concerto for Strings (Lully-Weingartner); Concerto for Pianoforte in D Minor (Mozart); Little Symphony (Ranta); Variations on the Lahti Interval Signal (Pingoud). **7.45,** News in Finnish. **8.0,** News in Swedish.

LANGENBERG

473 metres; 60 kW.—**12 Noon,** Orchestral Concert, conducted by Eysoldt. Overture, Sophonisba (Paër); Ballet Suite (Fresco); Souvenir (Renéc); Andalusian Romance (Sarasate); Selection from The Daughter of the Regiment (Donizetti); Rosza Czardas (Hubay); Waltz, In lauschiger Nacht (Ziehrer); Potpourri, Servus Wien (Dostal); March, Unter Brief und Siegel (Becker). **1.0 p.m.** (in an interval), News. **1.30,** Sponsored Programme with Gramophone Records. **2.30,** Exchange and Time Signal. **2.50,** Programme for Children. **3.20,** Notes on the Broadcasts for Schools. **3.30,** Talk: The Teaching of Geography. **4.0,** Orchestral Concert of Italian Opera Music, conducted by Kühn. Soloist: Margherita Cossa (Soprano). Overture, Semiramis (Rossini); Songs; Ballet Music from Macbeth (Verdi); Songs; Prelude to Aïda (Verdi); Songs; Overture, Sicilian Vespers (Verdi). **5.15,** Italian Lesson. **5.45,** Weather, Time, Exchange, and Sports Notes. **6.0,** Agricultural Talk. **6.20,** Talk: The Plant World—Banana Trees. **6.35,** Talk: The Evolution of West-Central Europe. **6.55,** First General News. **7.0,** Programme to be announced. **7.30,** German Baroque Music—Concert by the Münster Orchestra, conducted by Werner Göhre. Soloists: Hilde Göhre (Harpsichord) and Ewald Kaldeweiler (Bass); Alpine Overture for String Orchestra and Oboe (Handel); Concerto for Harpsichord and String Orchestra after the Organ Concerto in B flat, arranged by Werner Göhre (Händel); Three Songs with Harpsichord and String Quartet accompaniment: (a) Abendlied, (b) Junggesellentreuden, (c) Rheinlied; Poems by Andreas Gryphius, Paul Flemming, Hofmann von Hofmannswaldau, and Joh. C. Günther; Tafelmusik—Suite for Chamber Orchestra (Telemann); Three Songs with Harpsichord and String Instrument Accompaniment (Erlebach): (a) Des Prahlers Worte, (b) Durch die Demut wird erhöht, (c) In Lieben nicht so lang besonnen; The Brandenburg Concerto in D, No. 5, for Harpsichord, Flute, Violin, and String Orchestra (Bach). **9.5,** News, Sports Notes, and Silent Night.

LAUSANNE.—See **Radio-Suisse Romande.**

LEIPZIG

389.6 metres, 120 kW.; and **DRESDEN, 319 metres.—12.15 p.m.,** Gramophone Concert: Polonaise in A (Chopin); Rustle of Spring (Sinding); Waltz in A (Brahms); Saxophobia (Wiedoeft); Baritone Solo, Prinz Eugen (Loewe); 'Cello Solo, Jagdstück (Popper); Trumpet Solo from Boccaccio (Suppé); Liebesträume (Liszt); Bravour-Variations (Mozart-Adam); Fugue in A (Tartini-Kreisler); Balalaika Solo, Valse Caprice (Pogorelov); Xylophone Solo, The Skaters (Waldteufel); Harp Solo, Am Springbrunnen (Zabel); Variations on Themes from The Merry Widow (Lehár). After the Concert, Exchange Quotations. **1.0 p.m.,** Advice for the Unemployed. **1.15,** Sponsored Programme with Gramophone Records. **2.0,** Review of Juvenile Literature: **2.35,** Exchange and Market Prices. **3.0,** Talk: Care of the Blind. **3.30,** Concert by the Altenburg Provincial Orchestra, conducted by Heinz Drewes: Turkish March (Mozart); Selection I Pagliacci (Leoncavallo); Overture, Hamlet, Op. 37 (Gade); Serenade for String Orchestra (Klengel). **4.30,** Weather and Time. **4.50,** Exchange Quotations. **5.5,** Talk for Women: The Life of a Welfare Worker. **5.30,** French Lesson. **5.50,** Introductory Talk on the Gewandhaus Concert of the 16th February. **6.0,** Dialogue on Village Life. **6.30,** Military Band Concert, conducted by Ferdinand Bier; March, Wir stehen fest und treu (Flath); Overture, Des Wanderers Ziel (Suppé); Regimental March; Song Cycle, Das treue deutsche Herz (Weninger); Three Regimental Marches; Potpourri of Soldier Songs (Hanneman); Three Regimental Marches; Parade March (Rühlmann); Marching Song from Autoliebchen (Gilbert); Glowworm Idyl from Lysistrata (Lincke); Der jungste Jahrgang (Morena). **8.0,** Economic Questions of the Day. **8.10,** Folk Songs of Alsace (collected by Goethe). **9.5,** News Bulletin. **9.15** (approx.), Concert by the Dresden Philharmonic Orchestra, conducted by Eduard Fendler; Water Overture (Telemann, arr. Fendler); Symphony in F (Benda-Fendler); Divertimento in C (Ritt); Sinfonie L'Imperiale (Haydn); Overture, Die Abenteurer (Kraus, arr. Fendler); Symphony in G Minor (Kunzen). **11.0** (approx.), Close Down.

LINZ.—See **Vienna.**

LJUBLJANA

574.7 metres; 2.5 kW.—**5.30 p.m.,** German Lesson. **6.0,** Country Sketches. **6.30,** Talk: Contemporary Heroes. **7.0,** Concert by the Grafika Orchestra. **8.0,** Concert from the Café Zvezda. **9.0,** Time, News, and Light Music on Gramophone Records.

LWOW

381 metres; 16 kW.—**6.5 p.m.,** Miscellaneous Items. **6.20,** Light Music on Gramophone Records. **6.30,** See **Warsaw. 9.25,** Programme relayed from **Cracow (312.8 metres). 9.55,** See **Warsaw. 10.30** (approx.), Close Down.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—**7.30 p.m.,** Radio Gazette for Lyons and the South-East. **8.30,** Concert. After the Concert, News Bulletin.

MADRID

ARANJUEZ (EAQ), 30.43 metres; 20 kW.—**10.30 p.m.,** Variety Concert. **10.45,** Radio Chronicle. **11.0,** Variety Concert (contd.). **11.35,** Talk. **11.40,** Light Music. **12 Midnight** (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 424.3 metres; 2 kW.—**7.0 p.m.,** Chimes, Exchange Quotations and Request Gramophone Concert. **7.15,** Medical Talk: The Prevention of Infectious Diseases in Children. **7.30,** Talk by Joaquin Espana Cantos, followed by Request Gramophone Records (contd.). **8.25,** News Bulletin. **8.30 to 9.0,** Lingnaphone English Lesson. **9.30,** Chimes and Time Signal. **9.35** (approx.), La Bohème—Opera (Puccini) on Gramophone Records. **11.45,** News Bulletin. **12.0 Midnight,** Chimes and Close Down.

MALMO.—See **Stockholm.**

MILAN.—See **Turin.**

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—**3.10 p.m.,** Concert by the Station Orchestra, conducted by **J.** Plichta. **4.10,** See **Prague. 4.30,** See **Brno. 5.0,** Light Music on Gramophone Records. **5.15,** See **Prague. 5.25,** See **Brno. 5.55,** see **Prague. 10.0** (approx.), Close Down.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—**4.0 p.m.,** News. **4.10,** Announcements. **4.30,** Concert. **5.30,** Concert of Light Music, relayed from the Radio Theatre. **8.0,** Dialogue in French. **8.55,** Time. **9.5,** Press Review.

MOTALA.—See **Stockholm.**

MUHLACKER.—See **Stuttgart.**

MUNICH

533 metres; 60 kW. Relayed by **Augsburg** and **Kaiserslautern, 560 metres;** and **Nürnberg, 239 metres.—3.45 p.m.,** Concert by Theo Freitag and his Orchestra: Overture, Salvator Rosa (Gomez); Carnival Suite (Gabriel-Marie); Selection from Faust (Gounod); Intermezzo, Die Mühle im Tal (Rhode); Fantasia on Themes by Weber (Urbach); Waltz, Printemps (Waldteufel). **4.45** (from **Nürnberg**), Talk on Commercial Aviation. **5.15,** Talk on Common Law. **5.35,** Talk for Workers. **5.55,** Time, Weather and Agricultural Notes. **6.5,** Dances of the Nations—Recital by Richard Staab (Pianoforte). **6.40,** Talk: Rational Dwellings. **7.0,** Bunter Abend—Carnival Concert by the Emil Roosz Band, the Little Station Orchestra, Six Saxophonists and Fifty Radio Girls, with The Isle of the Blest—Radio Report from the Carnival of the Harmony Club. **9.0,** An Interview with the Hungarian Statesman Count Bethlen. **9.20,** Time, Weather, News and Sports Notes.

NAPLES.—See **Rome.**

NOTODDEN.—See **Oslo.**

OSLO

1.083 metres; 60 kW. Relayed by **Fredrikstad, 365.8 metres; Hamar, 574.7 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres;** and **Rjukan, 447.1 metres.—4.0 p.m.,** Concert of Chamber Music by the Radio Ensemble. **5.15 p.m.,** Talk for Housewives. **5.45,** Accordion Music. **6.0,** Announcements, Weather, and News. **6.30,** English Lesson. **7.0,** Time Signal. **7.1,** Javanese Song Recital by Mme. Condou Keudijk, relayed from the University Concert Hall. **8.10,** Literary Talk. **8.40,** Weather and News. **9.0,** Topical Talk. **9.15,** Concert by the Station Orchestra, con-

FEB. 14th TUESDAY *continued*

FEB. 14th **TUESDAY** *continued*

ducted by Hugo Kramm: Overture, Til saeters (Reissiger); Norwegian Lyric Suite (Palmgren); Midtsommervaka (Alfven); Oriental March (Nielsen); Norwegian Rhapsody, No. 3 (Svendsen). **10.15 (approx.)**, Close Down.

OSTERSUND.—See **Stockholm.**

PALERMO

537.6 metres; 3 kW.—**7.0 p.m.**, Dopolavoro Notes, Tourist Talk, Agricultural Report, and Giornale Radio. **7.20**, Orchestral Music. In the interval at **7.30**, Time and Announcements. **7.45**, Tosca—Opera in Three Acts (Puccini) on Gramophone Records. In the intervals, Talk and Art Notes. **9.55**, News Bulletin.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW. Time Signals (on **2,650 metres**) at **9.26 a.m.** and **10.26 p.m.** (Preliminary and 6-dot Signals.)—**5.45 p.m.**, Le Journal Parlé. **7.20**, Weather Report. **7.30**, Concert by the Jean Ibos Quintet: Eine kleine Nachtmusik (Mozart); Cordoba (Albéniz); Selection from Dardanus (Rameau); Waltz (Strauss); Chanson rêvée (l'Enfant); Czardas, from Countess Maritza (Kálmán); Military March (Schumann). **8.30**, Two Plays: (a) Le Carrosse du Saint-Sacrement, One-Act Play (Mérimée), (b) Le Testament du Père Leleu—Peasant Farce (R. Martin du Gard).

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—**6.45 p.m.**, Le Journal Parlé. **7.0**, Sponsored Concert with Gramophone Records. **8.0**, Film Review. **8.5**, Talk: The Music Hall and the Circus. **8.15**, Interval. **8.30**, Sponsored Concert. **8.45**, Interval. **9.0**, Jules Massenet Concert by the Symphony Orchestra: Overture, Phèdre; Meditation from Thaïs; Scènes alsaciennes; Overture, Brumaire; Prelude and Clair de lune from Werther; Nocturne, March and Stretto. **10.30**, News.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—**6.45 a.m.**, Physical Culture. **7.30**, Weather and Physical Culture (contd.). **7.45**, Probable Relay of the Test Match from Australia. **8.0**, Press Review and Weather. **8.30**, Test Match Relay (contd.). **12 Noon**, Concert by the Krettly Orchestra: Overture, Le Cheval de Bronze (Auber); Selection from Les Dragons de Villars (Maillart); Overture, Giralda (Adam); Selection from Mignon (Thomas); Two Songs from The Barber of Seville (Rossini); Two Songs from Les Noces de Jeannette (Massé); Invocation à la nuit from Julien (Charpentier); Selection from La Lépreuse (Lazzari); Suite for Strings (Kouguell); Norwegian Rhapsody (Svendsen); Dance (Turina); First Spanish Dance (Falla). In the intervals at **1.0**, Exchange, News, and Weather, and at **1.30**, Exchange. **2.0**, Exchange and Announcements. **3.45**, Exchange and Market Prices. **4.30**, Elementary English Lesson. **6.10**, Agricultural Talk. **6.30**, Advanced Bookkeeping Lesson. **6.50**, Theatre Review. **7.5**, Talk: The French in the Argentine. **7.20**, Concert by the Krettly Orchestra: Gavotte (Steck); 'Cello Solo: Chant du Crépuscule (Fauchet); Zorriga (Bousquet); Suite miniature (Coppola). **7.45**, English Press Review, Commercial Prices, and News. **8.0**, Monsieur Scapin—Comedy (Richepin). In the intervals at **8.30**, News and Weather, at **8.40**, Review by Pierre Scize, and at **9.15**, Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW. Relayed by **W8XK** on **48.85 metres** and **25.27 metres.**—**9.0 p.m.**, Work-a-day Thoughts. **9.5**, Business News. **9.15**, Programme to be announced. **9.30**, Weather Report. **9.31**, Johnny Muskrat. **9.32**, Market Reports. **9.45**, Pianoforte Interlude. **9.50**, David Lawrence Dispatch. **9.55**, KDKA Artist Bulletin. **9.58**, Programme Announcements. **10.0**, Programme to be announced. **10.15 to 11.15**, New York Relay. **10.15**, Adventures of Dr. Dolittle. **10.30**, The Singing Lady. **10.45**, Little Orphan Annie. **11.0**, Our Daily Food by Maude and Cousin Bill. **11.15**, Time Signal. **11.16**, Weather Report. **11.17**, Teaberry Sport Review. **11.22**, Press News Reeler. **11.27**, Strange Facts. **11.29**, Temperature Report. **11.30**, KDKA Orchestra. **11.45 to 12.45 a.m. (Wednesday)**, New York Relay. **11.45**, To-day's News by Lowell Thomas. **12 Midnight**, Pepsodent Amos 'n' Andy. **12.15 a.m.**, National Advisory Council on Radio in Education—Congressional Procedure by Prof. Frederic A. Ogg, University of Wisconsin and Rep. Robert Luce, 13th Massachusetts District. **12.45**, Fireflies. **1.0 to 3.15**, New York Relay. **1.0**, Eno Crime Club. **1.30**, Time Signal and Adventures in Health. **1.45**, Phillips Lord in The Country Doctor. **2.0**, Household Musical Memories. **2.30**, Willard Robinson's Deep River Orchestra. **3.0**, The Time Detective. **3.15**, Westinghouse Pioneers. **3.30**, Ilo May Bailey and Orchestra, from New York. **3.45**, Bradley Kincaid. **4.0**, Time Signal. **4.1**, Teaberry Sport Review. **4.11**, Temperature Report. **4.12**, Weather Report. **4.13**, KDKA Artist Bulletin. **4.15**, Press Last Minute News Flashes. **4.20**, Henry Halstead and his Californians. **5.0**, Cotton Club Orchestra, from New York. **5.30**, Time Signal and Good-night.

PORSGRUND.—See **Oslo.**

PRAGUE

488.6 metres; 120 kW.—**3.10 p.m.**, See **Moravská-Ostrava.** **4.10**, Talk on Economics. **4.20**, Czech Lesson for Germans and German Lesson for Czechs. **4.50**, Light Music on Gramophone Records. **5.5**, Agricultural Market Prices. **5.15**, Topical Talk for Workers. **5.25**, News in German. **5.30**, German Transmission. Pianoforte Recital by Professor R. Glaser. **5.55**, Talk on the following Transmission. **6.0**, An Opera relayed from the National Theatre. In the interval at **8.0**, Time Signal. **9.0**, Time Signal. **9.1**, News Bulletin. **9.15**, Variety Music on Gramophone Records. **10.0** (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; **LAUSANNE, 680 metres;** and **GENEVA, 760 metres.**—**5.30 p.m.** (from **Geneva**), English Lesson. **6.0** (from **Geneva**), Weather, News, and Announcements. **6.20** (from **Geneva**), Answers to Correspondence. **6.30** (from **Geneva**), Concert of New Gramophone Records. **7.0** (from **Geneva**), Talk: The Work of the League of Nations. **7.15** (from **Geneva**), The Midnight Sun—Radio Play (Theo Fleischmann). **8.15** (from **Lausanne**), Variety Programme. **9.0**, News Bulletin and Weather Forecast. **9.15** (approx.), Close Down.

RIGA

525 metres; 15 kW.—**6.0 p.m.**, Weather. **6.5**, Orchestral Concert, conducted by J. Medins. **7.0**, News Bulletin. **7.20**, Song Recital by Nathalie Ulands-Sules. **7.40**, Orchestral Concert, conducted by J. Medins: Humoresque (Dvorak); Suite, A Fête in Aranjuez (Demersmann); Salut d'amour (Elgar); Suite, Agnès, dame galante (Fevrier). **8.0**, Weather and News. **8.30**, Dance Music. **10.0** (approx.), Close Down.

RJUKAN.—See **Oslo.**

ROME

Call 1RO, 441 metres; 50 kW. Relayed by **Naples, 319 metres,** and **2RO, 25.4 metres.**—**7.0 a.m.**, Gymnastics. **7.15 to 7.30**, Giornale Radio and Announcements. **11.30**, Weather and Light Music on Gramophone Records. **12.0 Noon**, Time and Announcements. **12.2 to 1.15**, Orchestral Concert. In the interval from **12.30 to 12.45**, Giornale Radio and Exchange. **3.45**, Children's Radio Review. **4.10**, Weather, Exchange, and Giornale Radio. **4.30 to 5.15**, Concert from **Milan.** **6.0**, Giornale Radio. **6.10** (from **Naples**), Shipping and Sports Notes. **6.15**, Atmospheric Signals, Agricultural Notes and Dopolavoro Announcements. **7.0**, Time and Announcements. **7.2**, Talk on Mars. **7.15**, Light Music on Gramophone Records. **7.30**, Sports Notes and Tourist Report. **7.45**, La donna perduta—Operetta in Three Acts (Pietri). In the intervals, Humorous Talk and Scientific Notes. After the Operetta, News.

SALZBURG.—See **Vienna.**

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 379.5 metres; 50 kW. Relayed at intervals by **W2XAF** on **31.48 metres,** and by **W2XAD** on **19.56 metres.**—**12 Midnight**, General Electric Programme. **12.15 a.m. (Wednesday)**, Stock Reports. **12.30** till Close Down, New York Relay. **12.30**, Soloist. **12.45**, The Goldbergs. **1.0**, Blackstone Plantation. **1.30**, Wayne King's Orchestra. **2.0**, Ben Bernie's Orchestra. **2.30**, Ed. Wynn and the Fire Chief Band. **3.0**, Lucky Strike Hour.

SCHWEIZERISCHER LANDESSENDER

BEROMUNSTER, 459 metres; 60 kW.; **BASLE, 244.1 metres;** and **BERNE, 245.9 metres.**—**9.20 a.m.**, Broadcast for Schools. **9.50 to 11.28**, Interval. **11.28**, Time Signal from Neuchâtel Observatory. **11.30**, Weather and News. **11.40**, Concert by the Radio Orchestra. **12.35 p.m.**, Weather and Exchange. **12.45 to 2.30**, Interval. **2.30**, Cinema Organ Music on Gramophone Records. **3.0**, Songs on Gramophone Records. **3.30**, Concert by the Radio Orchestra. **4.0**, Variety Music on Gramophone Records. **4.30**, Weather Report. **4.35 to 5.30**, Interval. **5.30** (from **Berne**), A Film Interview Werner Düby meets Vera Liessem. **6.0**, Time and Weather. **6.1**, Notes on the Broadcasts for Schools. **6.15** (from **Berne**), Talk: Swiss Export Trade, last Year and Now. **6.45** (from **Zürich**), Talk on the following Transmission. **7.0** (from **Zurich**), Grande Messe des Morts (Berlioz), by the Zürich Male Voice Choir, Women's Choir and Orchestra, conducted by Herman Hofmann, relayed from the Tonhalle. Soloist: Luis van Tulder (Tenor). **8.30**, Weather and News. **8.40**, Concert by the Radio Orchestra. **9.15** (approx.), Close Down.

SOTTENS.—See **Radio-Suisse Romande.**

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by **Boden, 1,229.5 metres; Göteborg, 322 metres; Horby, 257 metres; Motala, 1,348 metres; Ostersund, 770 metres;** and **Sundsvall, 542 metres.**—**4.5 p.m.**, Programme for Children. **4.45**, Concert of Light Music. March (Rydberg); Potpourri (Meissner); Waltz, Estudiantina (Waldteufel); Serenade (Schubert); Schottische (Wilhners); For You (Holtz); March, Graf Zeppelin (Teike). **5.25**, Song Recital by Wilhelm Julinder. **5.45**, French Lesson, relayed from **Malmö, 231 metres.** **6.15**, Weather and News. **6.30**, Talk. **7.0**, Orchestral Concert of Operetta and Sound Film Music. **8.15** (from **Göteborg**), Literary Review. **8.45**, Weather and News. **9.0**, Popular Music on Gramophone Records. **10.0** (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—**11.30 a.m.**, Gramophone Concert of Classical Music. **12.45 p.m.**, News. **1.0**, Time and Exchange. **1.5**, Gramophone Concert of Light Music. **2.0 to 4.45**, Interval. **4.45**, Talk in French: Normandy. **5.0**, Dance Music by a Jazz Band, conducted by M. Roskam: March, Un, deux, toute la compagnie (Reisfeld and Marbot); Foxtrot (Cazaux); Foxtrot, Lullaby of the Leaves (Young-Petkere); Boston Waltz, While we danced at the Mardi Gras (Mercer and Apler); Foxtrot, My Silent Love (Dana Suesse); Foxtrot, Pompons Jerry (Allouche); Tango, Siete Diaz (Lucchesi); Foxtrot, C'est un petit village (Reisfeld-Kimmich-Marbot); Foxtrot, Dreamy and Blue (Allouche); Waltz, Verschmähte Liebe (Lincke); Foxtrot, Sugar o' mine (Paradis); Foxtrot, I've found a wonderful Girl (Knight); Tango, Petite Madone (Wetzel-José); Totor, Cas tort (Mercier); Rumba, Campesina (Lucchesi); Foxtrot, This is the Day of Days (Woods-Dixon); March, Voilà l'travail (Heymann). **6.0**, Talk in German: How France became a United Nation. **6.15**, Topical Talk in French. **6.30**, Orchestral Concert, conducted by Maurice de Villers: Russian March (Ganne); Overture, Maritana (Wallace); Divertissement on Russian Songs (Rabaud); Selection from Tiefland (d'Albert); Serenade in A (Widor); Algerian Suite (Saint-Saëns). **7.30**, Time and News. **7.45**, Extracts from La Mascotte—Operetta (Audran), on Gramophone Records. **8.25**, Lottery Results. **8.30**, Gala Programme, relayed from **Paris.** **10.30** (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and **FREIBURG, 570 metres.**—**12.30 p.m.**, Concerto No. 1 in D (Mozart) on Gramophone Records. **1.0**, Sponsored Gramophone Records. **1.30 to 2.0**, Advanced English Lesson. **3.0**, Talk: Flowers. **3.30** (from **Freiburg**), Talk for Women. **4.0**, See **Langenberg.** **4.45**, Time, Weather and Market Prices. **4.55**, A Tale about Ski-ing (Carl Ebert). **5.20**, A Discussion on Aviation in Bad Weather. **5.45**, Time and News. **6.0**, Concert by the Schulrabe Balalaika Orchestra: Sorrow and Joy—Russian Love and Dance Melodies (arr. Schulrabe); Barcarolle (Tchaikovsky); Im Walde—Folk Song with Variations; Dance Melodies, (a) Romanian, (b) Polish, (c) Ukranain, (d) Russian. **6.30**, Song Recital by Carl Rehfuss (Baritone): Die Zehn Gebote—from an Oratorio (Geiger-Kullmann); An die ferne Geliebte (Beethoven). **7.0**, See **Frankfurt.** **8.0**, Programme for **Munich.** **9.0**, Time, News, Weather and Programme Announcements. **9.15**, Sonatas for Violin and Pianoforte (Brahms): Sonata No. 1 in G, Op. 78; Sonata No. 2 in A, Op. 100.

SUNDSVALL.—See **Stockholm.**

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—**6.0 p.m.**, News. **6.15**, Military Music. **6.30**, Sound Film Music. **6.45**, Ballet Music from Coppélia (Delibes). **7.0**, Airs from: (a) Figaro (Mozart), (b) Mireille (Gounod), and (c) Cavalleria rusticana (Mascagni). **7.15**, News, Horse Racing Results and Market Prices. **7.25**, Commercial Report. **7.30**, Programme by an Argentine Orchestra. **7.45**, Programme by a Viennese Orchestra. **8.15**, Light Music. **8.30**, Extracts from The Damnation of Faust Berlioz). **9.0**, Popular Music: Melody (Zeller); Offenbach Operetta Potpourri: Aux étoiles (Dupare); The Turkish Patrol (Michaelis); Minuet from Berenice (Handel); Minuet in G (Paderewsky). **9.30**, Concert: Romance des enfants, from Rip van Winkle (Planquette); Pardon, mon papa, from Le Roi Pausole (Honegger); Je n'oserai plus faire ça, from Enlevez-moi (Gabaroche); Que ne puis-je la rencontrer! from Miss Decima (Audran); Accordion Solos. **10.0**, Three Songs for Choir. **10.15**, North African News. **10.30**, Concert for Listeners in Morocco: March (Kaiser); Potpourri; Selection from Lakmé (Delibes); (a) Duet, Mais je ne sais, (b) Sous le dôme épais; Dans ma péniche (Borel-Clerc); Quand on revoit la tour Eiffel (Desmoulin); En diligence sous bois (Shaeffer). **11.0**, Light Music. **11.15**, Chansonnettes. **11.30**, Programme in English by the I.B.C. Concert of French Music: Variations for Pianoforte (Saint-Saëns); Flute Solo: Idyll (Godard); Pianoforte Solo: La Cathédrale (Debussy); Xylophone Solos: (a) Gallop (Oertel), (b) March (Lehár); Drops of Water (Piston). **12.0 Midnight**, Weather and Announcements. **12.30 a.m. (Wednesday)**, Symphony No. 5 in C Minor (Beethoven).

TRIESTE

247.7 metres; 10 kW.—**4.0 to 5.0 p.m.**, Concert of Chamber Music: Concerto in D Minor for Two Violins and Pianoforte (Bach); Soprano Solos: (a) To Sylvia (Schubert), (b) Or ch'io non sogno più (Rontani), (c) M'ha preso alla sua ragna (Paradies); Concerto in A Minor for Two Violins and Pianoforte (Vivaldi-Nachez). Soprano Solo: In questo semplice modesto asil (Donizetti-Betly). **5.35** till Close Down. See **Turin.**

TRONDHEIM.—See **Oslo.**

TURIN

273.7 metres; 7 kW. Relayed by **Milan, 331.5 metres; Genoa, 312.8 metres;** and **Florence, 560.8 metres.**—**4.30 p.m.**, Orchestral Concert, conducted by Ugo Tansini: Esquisses Flamandes (Brusselmans); Selection from I Pagliacci (Leoncavallo); L'ora della preghiera (Pesse); Overture, Bruschino (Rossini). **5.15 to 5.35**, Interval. **5.35**, Giornale Radio, Agricultural Report, and Dopolavoro Notes. **6.0**, Songs and Light Music on Gramophone Records. In the intervals at **6.20**, Giornale Radio; at **6.30**, Time Signal, Announcements, and Report of the Royal Geographical Society; and at **7.0**, Giornale Radio and Weather Forecast. **7.30**, An Operetta in Three Acts. In the intervals, Talk and Art Notes. After the Operetta, Giornale Radio.

VATICAN CITY

19.84 metres (Morning), and **50.26 metres (Evening);** 10 kW.—**10.0 to 10.15 a.m.**, Religious Information in Spanish. **7.0 to 7.15 p.m.**, Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by **Graz, 352.2 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 245.9 metres;** and **Salzburg, 218.5 metres.**—**3.45 p.m.**, Concert by the Vienna Women's Symphony Orchestra, Conductor: Julius Lehnert. Soloist: Martl Kupka (Violin). Divertimento in E Flat (Haydn). Violin Solo: Romance in G (Beethoven). Violin Solo: Sarabande and Tambourin (Leclair); Serenade in C for String Orchestra (Tchaikovsky). **4.55**, Talk on Fruit Trees. **5.20**, Discussion between Dr. Max Eisler and Art Students. **5.45**, French Lesson. **6.10**, Time, Weather, and Programme Announcements. **6.20**, Talk by Dr. Leo Frobenius: My latest Expedition to Africa. **6.50**, Concert by the Vienna Symphony Orchestra conducted by Max Schönherr. Soloist: Erich Zimmermann (Tenor). Overture, Der Hexenspiegel (Eysler); Serenade for String Orchestra (O. Straus); Four Songs (Weinberger): (a) Verklungen, (b) Kahnfahrt, (c) Abschiedswisse, kleines Mädchen, (d) Abendfriede; Scherzo caprice (Nedbal); Prelude to Tatjana (Lehar); Aria from Paroli (Fall); Frühlingsnotturno (Heymann); Suite from The Merchant of Venice (Sullivan). **8.5**, Nürnberg—A Radio Sequence. **9.5**, News, Weather, and Announcements. **9.20**, Music from Paper. **9.50**, Dance Music by the Charly Chapp Jazz Band, relayed from the Westminster Café.

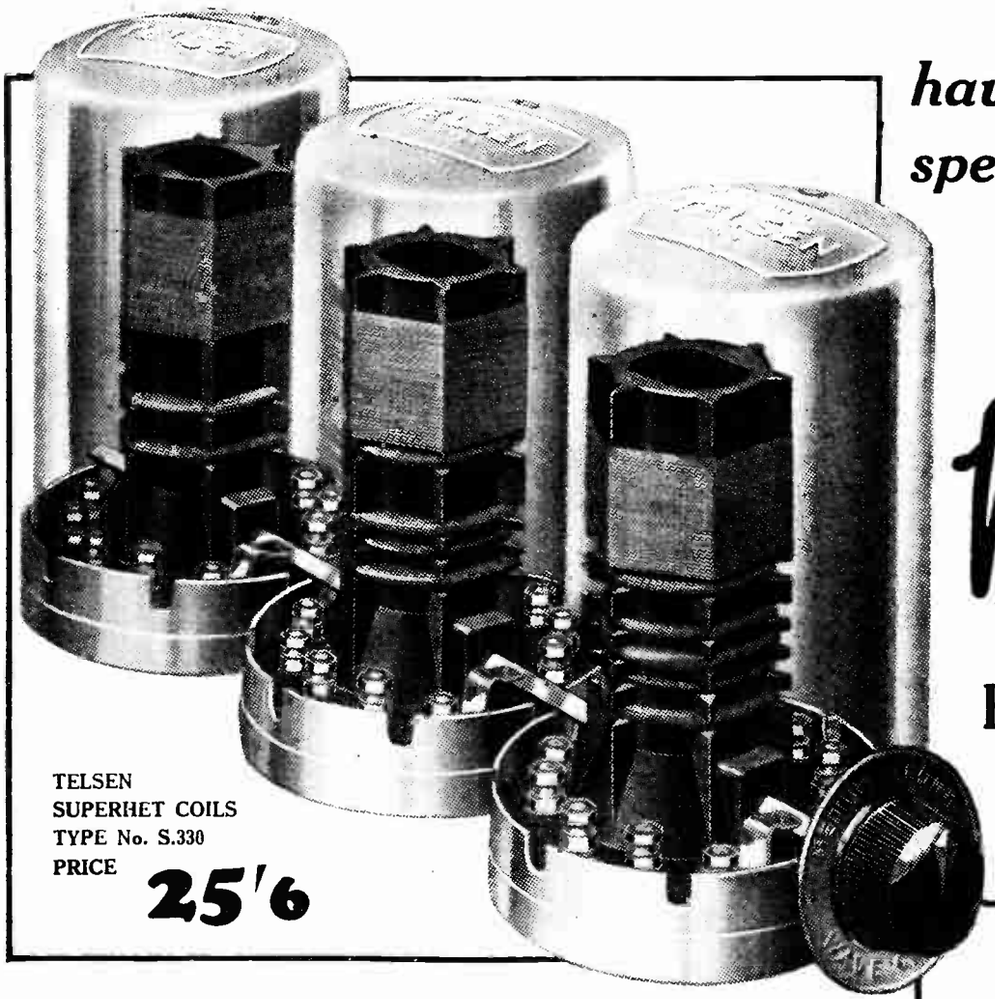
WARSAW

1,411 metres; 120 kW.—**10.58 a.m.**, Time Signal and Bugle Call from the Tower of St. Mary's Church, Cracow. **11.5**, Programme Announcements. **11.10**, Light Music on Gramophone Records. **12.20 p.m.**, Weather Forecast. **12.25 to 2.10**, No Transmission. **2.10**, Announcements. **2.15**, Economic Notes. **2.25**, Aviation and Anti-Gas Drill. **2.30**, Announcements. **2.35**, Book Review. **2.50**, Popular Music on Gramophone Records. **3.25**, Talk on Education. **3.40**, Talk on Books, relayed from **Wilno (563 metres).** **4.0**, Concert by the Warsaw Philharmonic Orchestra, conducted by Fitelberg: Soloist: Mme. E. Feinstein (Pianoforte): Overture, Oberon (Weber); Hungarian Fantasia for Pianoforte and Orchestra (Liszt); Siegfried Idyll (Wagner); Overture, Rienzi (Wagner). In the interval, Announcements. **4.55**, Programme Announcements. **5.0**, Light Music from the Gastronomia Café. In the interval, News. **6.30**, Talk on Music. **6.45**, Radio Journal. **7.0**, Concert by the Station Orchestra, conducted by Oziminski: Soloist: A. Jurowicz (Flute); Second Suite from Peer Gynt (Grieg); Serenade (Pierné); Symphonic Poem, Danse macabre (Saint-Saëns); Moorish Rhapsody from the Algerian Suite (Saint-Saëns); Italian Concerto for Flute and Orchestra (Demerssemann); Ballet Music from Feramors (Rubinstein); Toreador et Andalouse (Rubinstein); Sérénade espagnole (Bizet); Hungarian Rhapsody No. 2 (Liszt). In the interval, Sports Notes and Radio Journal. **8.20**, Pianoforte Recital by Pantscho Wladigierow. **9.0**, Literary Talk. **9.15**, Light Music from the Fukier Restaurant. **9.55**, Aviation Weather Report and Police Notes. **10.0**, Dance Music, relayed from **Katowice (408 metres).**

ZURICH.—See **Schweizerischer Landessender.**

Foreign Programmes continued on page XIII.

TELSEN SUPERHET COILS



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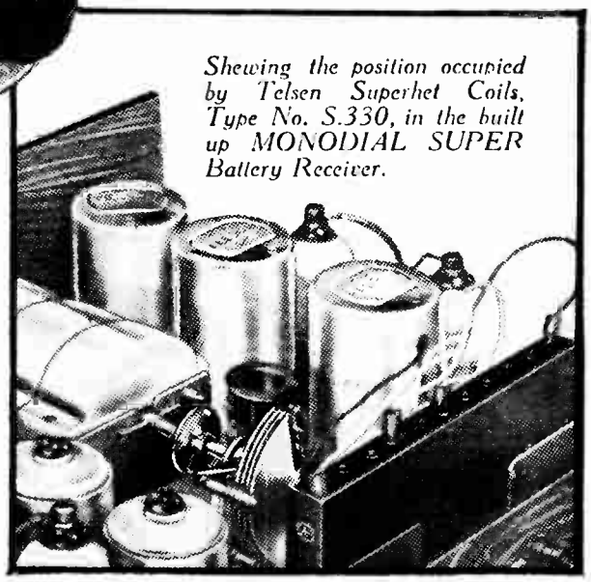

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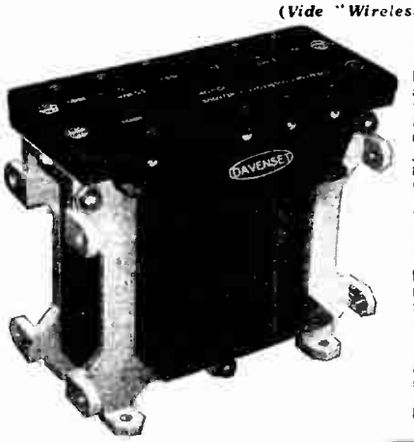
Wireless World **Independent Investigation, reports that—**

DAVENSET

Transformers "...are well above the average."

(Vide "Wireless World," Nov. 11, 1932)



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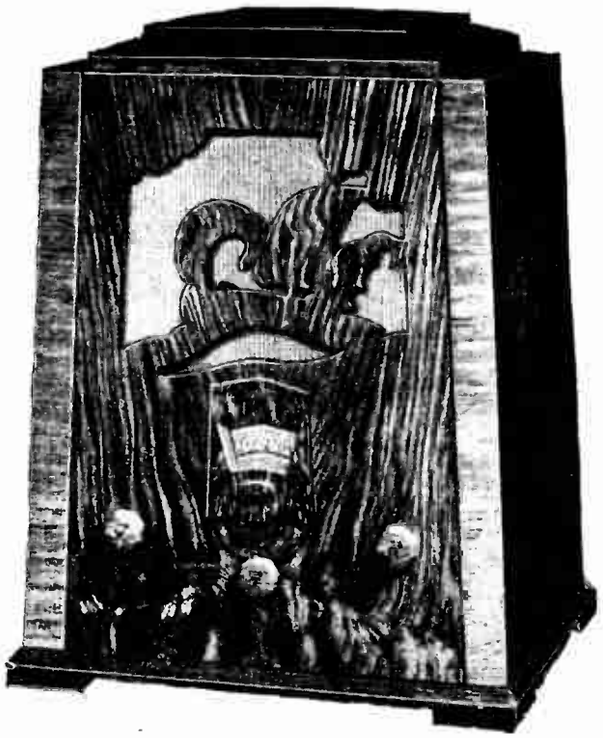

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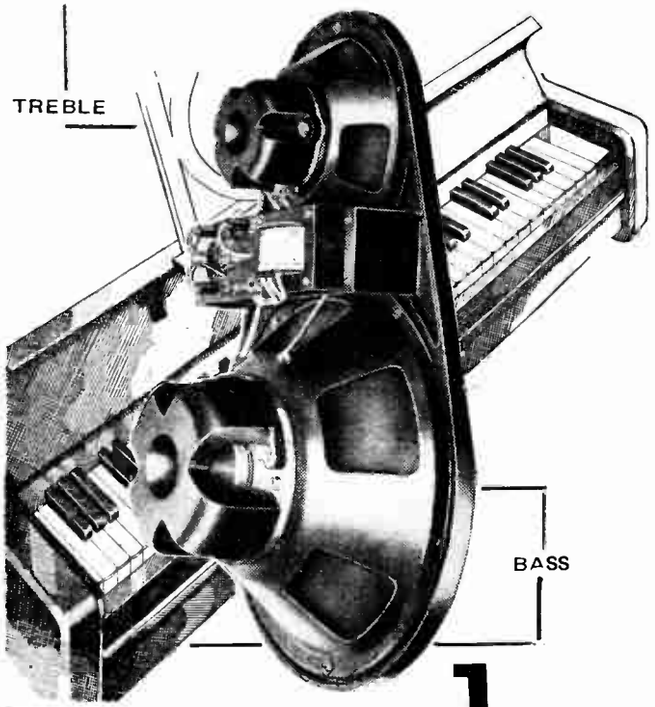

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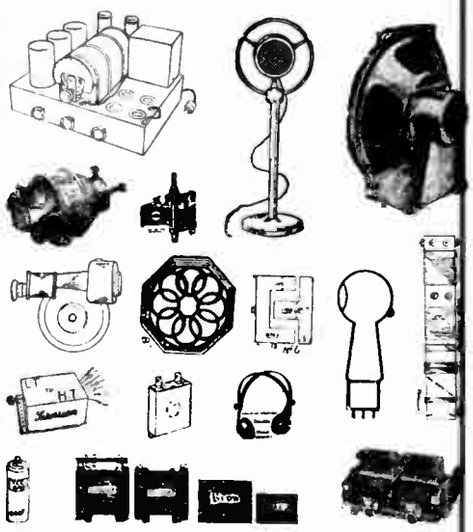

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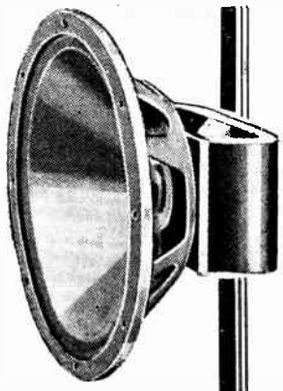

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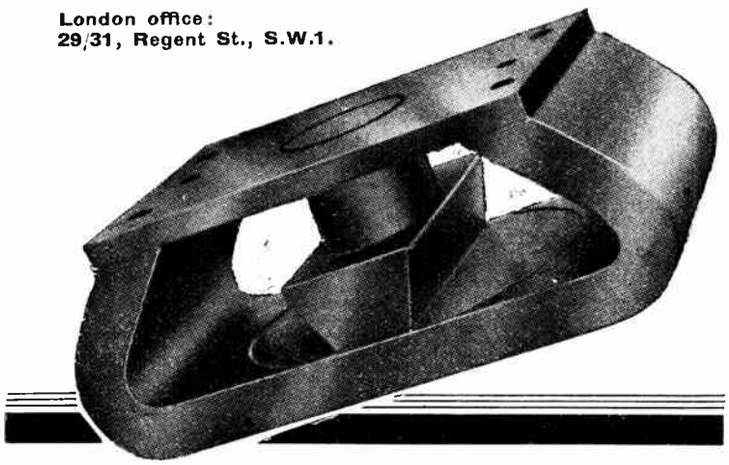

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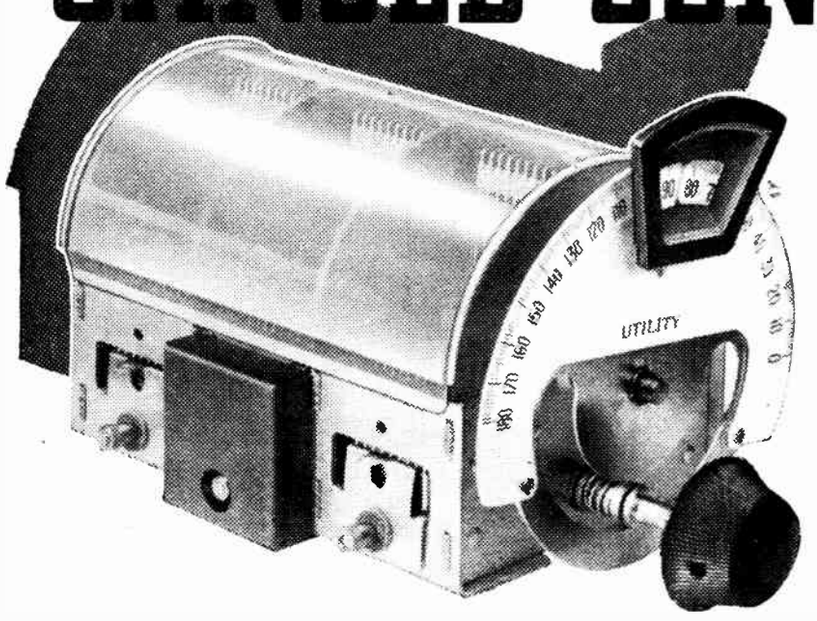

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The Wireless World

THE PRACTICAL RADIO JOURNAL
22nd Year of Publication

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EDITORIAL COMMENT

Nation Shall Speak Peace Unto Nation

Justify the B.B.C.'s Motto

WE may be excused if from time to time we have wondered what prompted the British Broadcasting Corporation to adopt as its motto "Nation Shall Speak Peace unto Nation," since although the Corporation has been in existence for more than ten years, we can recollect no instance when broadcasting has been used for communication between one nation and another, except on certain rare occasions when there has been a re-broadcast of some individual programme originating in another country.

There would seem to be ample scope for the B.B.C. to make their motto effective. The difficulty in international broadcast communication in Europe centres around the language problem. Music is internationally understood, but the language differences make national programmes, insofar as talkies are concerned, appreciated abroad only by those very few listeners who have a sufficient knowledge of the language used to understand them.

Why should not the co-operation of European broadcasting authorities be arranged in a scheme whereby talks would be broadcast in languages other than those of the country from which the broadcast originated? These talks would have to be arranged on the understanding that they would not be in the nature of propaganda. The motto, "Nation Shall Speak Peace unto Nation," would guide the choice of subject matter. There should be nothing in the talks calculated to give offence to the country in whose language these broadcasts were conducted. As a commencement, we would suggest talks written by political heads and leaders of public thought in each country, which would express national viewpoints on important questions of the day; other talks would deal with domestic life, education, recreations, etc. These talks would, in the case of this country, be translated into the various languages of the Continent and given as a series from the national transmitters. Similarly, we would like to hear corresponding views in English talks from the capitals of Europe.

We cannot but believe that talks of this nature would have an influence not only educational, but social, and would help to bring about a better understanding between nations than it is ordinarily possible to achieve through the existing channels of intercommunication. We commend this proposal to the B.B.C. and would urge them to consider whether, on some such lines as we have briefly outlined, they could not set the example and invite other broadcasting authorities to help to stimulate interest between European nationals and so justify the Corporation's motto, "Nation Shall Speak Peace unto Nation."

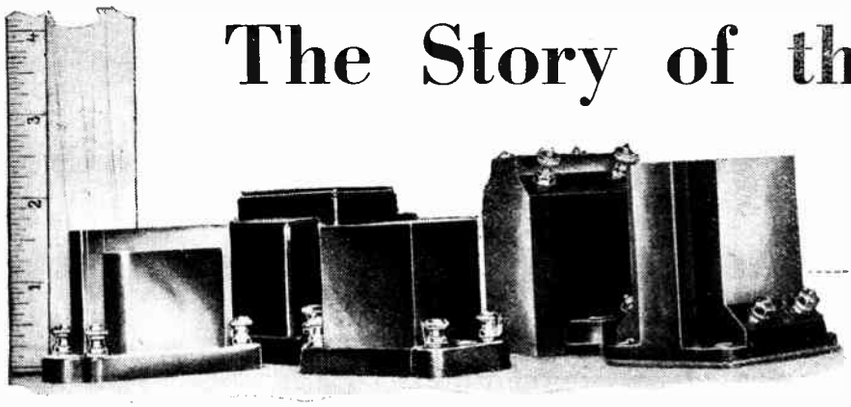
Foreign Stations

Readers' Views

READERS have shown very great interest in the subject of foreign and local listening discussed in our issue of January 27th. In this issue we publish a representative selection of letters received.

In forming opinions on this question let us be careful to remember that fading can now be practically overcome with automatic volume control and that there is every likelihood of legislation controlling electrical interference in the near future. Manufacturers, in deciding upon their future policy, must take these factors into consideration.

The Story of the Small L.F. Transformer



The Advantages of Alloy Cores

By L. S. CRUTCH, B.Sc.

THE introduction of the high-permeability core has been responsible for the appearance during the last two years of a considerable number of L.F. transformers of quite Lilliputian dimensions. When using these components not only is there much saving of space but there are electrical advantages which are explained in this article in terms easily understood by the less advanced student of wireless.

JUST what artifice on the part of the maker of L.F. transformers has enabled a shrinkage in dimensions to be brought about during the last two years may not be quite clear, although reference is usually made to the special properties of some particular core on which the transformer is wound. It is hoped in this account to give some idea of what lies behind this large reduction in size, and how these midgets compare with their larger predecessors. We shall also see how circuits need slight modification from former arrangements if we are to use this new piece of apparatus to its fullest advantage.

What is Permeability?

We use a transformer as a means of coupling one valve to the next in an amplifier, and as such it is expected to hand on to the next valve the voltage presented to it by the first, at the same time further justifying its existence by magnifying this voltage several times before handing it on. To do either of these things it must have inductance; and inductance, as is well known, is obtained by winding turns of wire over a core which is usually iron. True, the winding would have inductance if the iron were not present, but its value would be very much less than when it is present. The property of iron in causing an increase in the inductance of winding when situated in its magnetic field is called its permeability, and it has this property by virtue of the fact that, being a magnetic material, it has a much lower "magnetic resistance" than the air or other material which would otherwise be in the field of the winding.

This permeability, as we shall see, is a very variable quantity, and depends not only on the material itself, but also on the conditions under which the material is used. The permeability of any non-magnetic material is unity, and it is a property of any magnetic material that it has a permeability greater than unity, or, in other words, that it has the property of increasing the magnetic effect of a coil of wire carrying a current. We want to be quite clear that inductance is a property associated with a changing magnetic field, it has no being when the field is steady and unchanging.

In any amplifier using valves there must be an impedance in the anode circuit if the voltage amplification from the valve is to be usefully employed. Furthermore, if the amplifier is to work over a range of different frequencies and is to give substantially equal amplification at all frequencies, this impedance must be large in comparison with the internal resistance of the valve which precedes it. In the case of an intervalve transformer this impedance is made up of the resistance and reactance of the windings. This resistance is the effective copper resistance of the winding, with an additional amount due to energy losses in the iron circuit. In any case this is usually small in comparison with the reactance of the windings. This reactance is the "resistance" offered to an alternating current, but merely in a blocking sense, in that it involves no dissipation of energy as occurs with what is more strictly termed an "ohmic resistance."

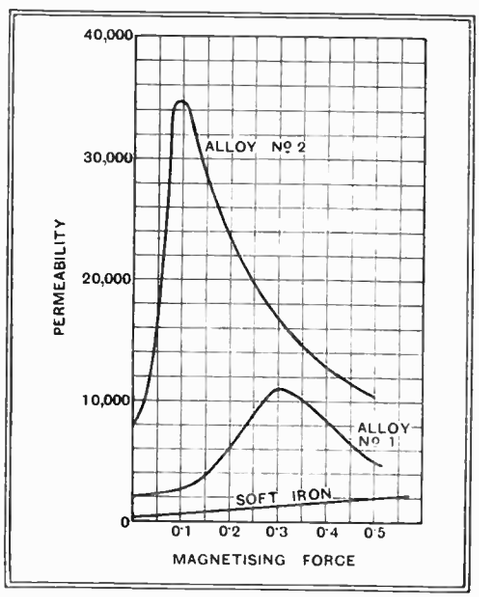


Fig. 1.—The enormous increase of permeability when certain metals are alloyed with iron can be seen from these curves.

The value of the reactance is given by the product of the frequency in question, a factor which happens to be 6.28 and the inductance; which brings us back to this inductance question in the transformer. It is evident that it is needed, and the question to be considered is how it is obtained. If we relied entirely on the air we should require something quite unwieldy and useless as an economic proposition. Ordinary iron bars would be an improvement, but thin sheets of soft iron provide a much better solution, having an effective permeability, under the conditions in an amplifier, of between three and four hundred. The amount of iron needed to produce a given value of inductance will depend upon the number of turns in the winding, so that for more turns less iron will be needed. As in the design of almost any piece of electrical apparatus, different quantities of two things will all produce about the same result, but certain carefully determined amounts will produce the best result at the lowest cost of production. Thus it is not possible to use very little iron and a great deal of wire or very little wire and a large quantity of iron. Intervalve transformers of good quality using ordinary soft-iron cores are necessarily bulky, and it used to be possible to estimate the goodness of a transformer by its size. Even then it was a bit risky, but now it is definitely out of the question.

New Alloys

Some ten years ago, when research work was being carried out on core materials in connection with loading coils used for long-distance telephony, it was discovered that the alloying, or intimate mixing, of quantities of other materials with the soft iron had the effect of very considerably increasing the magnetic permeability. Nickel was the principal constituent added, although traces of copper, chromium, and molybdenum were also

The Story of the Small L F. Transformer—

found to be beneficial in certain circumstances. The results obtained in terms of this property "permeability" were quite astonishing, and are best realised by looking at the curves in Fig. 1, which give a comparison between ordinary soft iron and two alloys of iron containing nickel and small quantities of other metals. A first inspection probably gives the impression that these alloys are enormously superior to the ordinary iron, but, before jumping to any conclusions, we have to consider a number of other factors, with the result that, although the alloys are definitely superior, the relative usefulness is rather more favourable to the iron than the graph would indicate.

This type of graph, taken under laboratory conditions, does not tell all the story, and some of the results shown there cannot in most cases be realised in ordinary use. A great deal of research work has been done since the original discovery, and is still in progress, on ways of using these alloys under practical conditions so as to get the advantages of the high permeability without having to be extremely careful of the way in which the material is used. The results, as exemplified by the modern nickel-iron transformer now obtainable, have been largely successful.

It will thus be seen that with a material now available having a permeability many times greater than that of iron the same inductance as before can be obtained with a much smaller number of turns. Actually, as explained before, a compromise is adopted and both the size of the core and the amount of wire is reduced, with the result that the overall dimensions of the transformer are considerably reduced. The cost can also be reduced, but not at the same rate as the size, because, although less wire is used, these special alloy cores are more costly than soft iron.

Leakage Between Windings

Let us now consider what changes, good or otherwise, have been made in the performance of the transformer. We are accustomed to see published curves of transformer amplification at different frequencies and to regard a long, horizontal straight line over most of the scale as the sign of a good transformer. Fig. 2 shows some such curves, which are straight over a large proportion of the frequency range but fall away at the extremities. Sometimes there is an upward bulge near the upper end, as shown by the dotted line. Curve A in Fig. 2 is for a poor transformer, while curve B is for a good modern example. The falling off at low frequencies in A is due to insufficient inductance so that the impedance of the circuit at low frequencies becomes comparable with the valve internal resistance; and, to a smaller extent, by copper and iron losses in the transformer itself. The falling away at the upper frequencies is due to the self-capacity of the transformer secondary winding and to leakage between the windings.

The leakage between windings refers to the amount of magnetic flux produced by the primary which is not absorbed in the secondary winding in giving a step-up in voltage. By careful design of the shape and size of the core and windings, and by the relation of the primary and secondary windings to one another, this leakage can be made quite small. It will usually be less than one per cent. in a good transformer provided that the ratio of secondary and primary turns is not too great, as when it becomes large it is very difficult to arrange the two windings so that there is little leakage. Furthermore, if the amount of wire on the transformer can be reduced both the self-capacity and the amount of leakage can both be reduced at the same time. When speaking of leakage and self-capacity, we may refer to the hump C on the curve B, which is a direct manifestation of the presence of both these undesirable features.

The leakage inductance referred to has been shown to behave as a small inductance joined in series with the secondary winding, and the self-capacity can be regarded as a fixed condenser joined across the secondary winding, together with the effective input capacity to the valve, a point which should not be forgotten. We thus have a parallel resonant circuit with small damping which, with the values usually occurring, resonates somewhere in the neighbourhood of 5,000 cycles; so that just as the amplification is dropping off this resonant circuit comes into the picture and raises it to something greater than it was previously. If it merely corrected for the fall so much the better, but usually it produces a pronounced effect over a narrow band of frequencies, and then the amplification falls off more rapidly than before. Considering these effects in the case of the transformer with the nickel-iron core, it is possible to obtain the necessary inductance to keep the amplification up at low frequencies by using much less wire than formerly, so that we therefore have less self-capacity than before and can more easily arrange that there is less leakage.

Thus, in one fell swoop several difficulties are solved, and we have a much-improved characteristic, combined with a very useful reduction in size and weight.

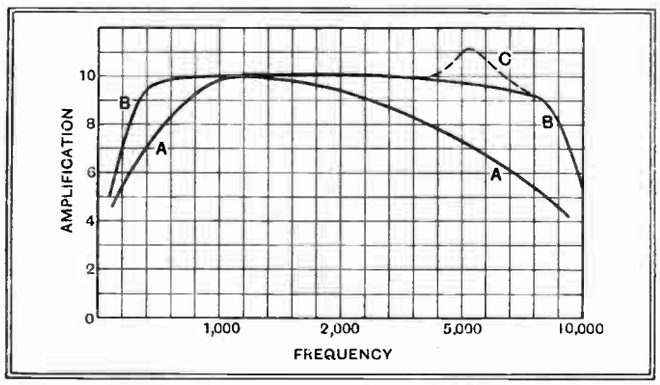


Fig. 2.—Amplification-frequency curves of two modern transformers. The drop at low frequencies is due to insufficient inductance, whilst the rise at C is accounted for by leakage inductance.

Diverting the D.C.

With regard to the performance characteristics which we have just discussed, so far so good, but we only get these improvements if we use the transformer in the right way, and that is where the main snag arises. If we look again at the curves of Fig. 1 we see that the quantity along the horizontal axis is marked "magnetising force," and that the permeability, and therefore the inductance, varies with this magnetising force. The size of this force is determined by the current in the transformer and the number of turns of the winding. It is usually expressed in units named after Gauss, a pioneer worker in magnetism, and is given by $\frac{4\pi}{10} \times$ ampere turns in the winding. Then, for a transformer having a given number of turns the inductance will vary with the current flowing through it. Furthermore, in an amplifier there is the steady plate current flowing through the windings on which the voice-frequency alternating currents are superposed. This steady plate current flowing through the primary winding will produce such a large magnetising force that the value of the permeability will fall to something very much lower than would have otherwise been the case, and may, in fact, be lower than that if ordinary soft iron were used.

The graph of Fig. 1 only shows the value when this magnetising force is quite small, but even at the greatest value shown there (i.e., 0.5) it is evident that the permeability of the alloys is falling fast, while that for iron is going up steadily. If we had 5 milliamps. flowing through a 2,500-turn primary there would be a magnetising force of 10 units, at which value we should find that the iron alone was definitely superior to the alloys. It is, therefore, very evident that if these alloy-cored transformers are to be used with any success in the plate circuits of valves, some means of diverting the steady plate current from the transformer windings must be found. Fortunately, this is not difficult, and the circuit of Fig. 3 gives the solution. Here we have virtually a resistance-capacity coupling with a transformer to step up the voltage at the point where it is normally applied to a high leak resistance between the grid and filament of the ensuing valve.

This circuit will be quite familiar to most readers, although the reasons lying behind its adoption may not have been so obvious. We will not discuss the choice of values of R and C, as this has been

The Story of the Small L.F. Transformer—

fully dealt with in previous articles (see article by Aughtie and Cope, *The Wireless World*, December 11th, 1929), and results are given enabling one to select the appropriate values for any given combination of valve impedances, primary inductance, and the lowest frequency to be fully amplified. There is, however, one point about the circuit which is new, and that is the resistance R1 connected across the coupling condenser. This is not a short-circuit on the H.T. battery, as might be supposed, as its value is high, of the order of a megohm. The reason for its use lies in the shape of the curve connecting permeability with magnetising force. Fig. 1 shows that when the magnetising force is nothing, or very small, the permeability is less than it is for slightly greater values of the magnetising force. Also the permeability is not proportional to the current in a simple way, that is to say, the graph connecting them is not a straight line.

By passing a very small direct current from the H.T. battery through the winding it will be possible to shift the point at which the transformer operates on to that part of the graph where it is straight and at the same time take advantage of the increased value of permeability at that point. No definite value can be assigned to R1 as it depends upon the value of H.T. and the core. About 1 to 2 megohms should be suitable in a large number of cases.

In order to show further what serious effects the presence of direct current may have on these alloy-cored transformers Fig. 4 shows some primary-inductance measurements made on both types when direct current was passing through the windings. It will be seen that in the case of soft iron there is actually a small improvement up to a certain value of current, after which the inductance falls slowly at first and later more rapidly.

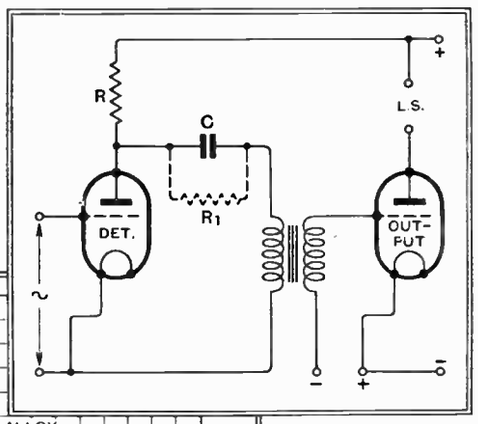


Fig. 3.—(*Above*) How to divert the steady anode current from the primary winding of a high-permeability transformer by the use of a parallel-fed circuit.

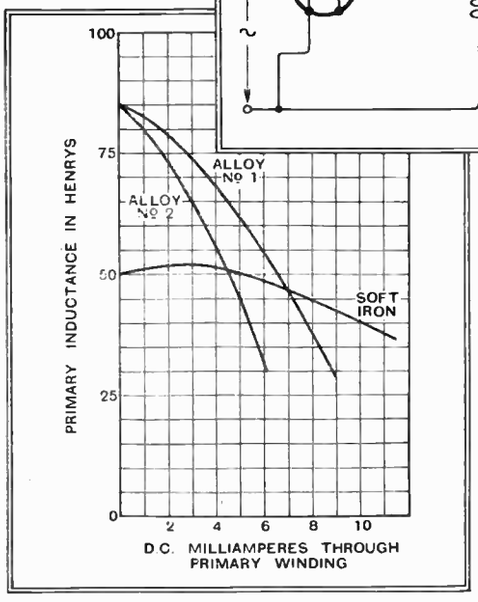


Fig. 4.—The effect on inductance of passing D.C. through the primary winding.

The Resonance Effect

It may be remarked in passing, and the argument will be obvious from the graph, that little or no improvement in quality will be obtained by using resistance-capacity coupling with an iron-cored transformer. If any improvement in bass response is obtained it will be due to a resonance effect between the primary inductance and the coupling condenser. If such an effect is desired the value of the coupling condenser should be chosen to resonate the windings somewhat lower than the lowest frequency which it is desired to produce. Furthermore, it is possible that in powerful amplifiers this method will lead to distortion in the form of harmonic frequencies produced, because the relation between the inductance and the magnetising force is not linear, but this is a point to be discussed later. Returning to the curves on Fig. 4, it will be seen that in the case of the alloys the inductance falls very rapidly indeed as the current exceeds a value lying somewhere between zero and two milliamps. As detecting and amplifying valves seldom operate with plate currents as low as this, it will be necessary in almost every case to send the plate circuit by some different path. If this were not done the advantage of the special core would soon be lost, and might easily become a disadvantage, as the curves show.

In most cases the passing of too much direct current through the windings does no permanent harm to the core, although it is not to be recommended. However, it will be found that any slight changes brought about by an excess of such treatment can be nullified by demagnetisation. This is not an erudite laboratory process, but merely consists in passing a few milliamps. of alternating current from the 50-cycle mains through the transformer windings for a few moments. If the primary inductance is high a connection across the 200-volt mains will usually give about the right current. It is preferable to include a safety lamp in series in case of accidents.

The overloading of intervalve transformers is not a question that is often referred to, but it must be remembered that it can take place and may spoil the reproduction of very high-quality apparatus. When the plate current varies in sympathy with the voice-frequency grid-voltage variations the magnetism in the transformer varies in the same way in order to produce a corresponding copy in the voltage on the secondary winding. These variations take place over a characteristic shaped rather like that of an ordinary triode, and the slope of this characteristic is the permeability which has been the main consideration in the properties of these transformers. Thus, if the current variations are too large they will extend beyond the straight part of the characteristic and distortion will be produced.

Fortunately, unless the overloading is very excessive the results are not serious, not, in any case, as serious as similar occurrences in valves. It is, however, a point to be borne in mind in amplifiers handling very considerable power, where the voltage in the plate circuit of the valve preceding the output stage may be considerable. This effect is not confined to nickel-iron cores; it can equally well occur in a soft-iron-cored transformer, particularly if this is rather heavily loaded with direct current, which will tend to bias the working point away from the centre of the characteristic towards one of the curved extremities.

The nickel-iron-alloy-cored transformer is a definite advance in the design of compact and popular-priced apparatus, and is already extensively used. The properties of high-permeability and low losses which have been discussed give an ideal solution to the problem of uniform performance and are finding application in very many branches of the communication field. At present, while valves have to pass a direct current which is many times greater than the signal variation in the current, it will be necessary to adopt the special measures in order to get the best results.

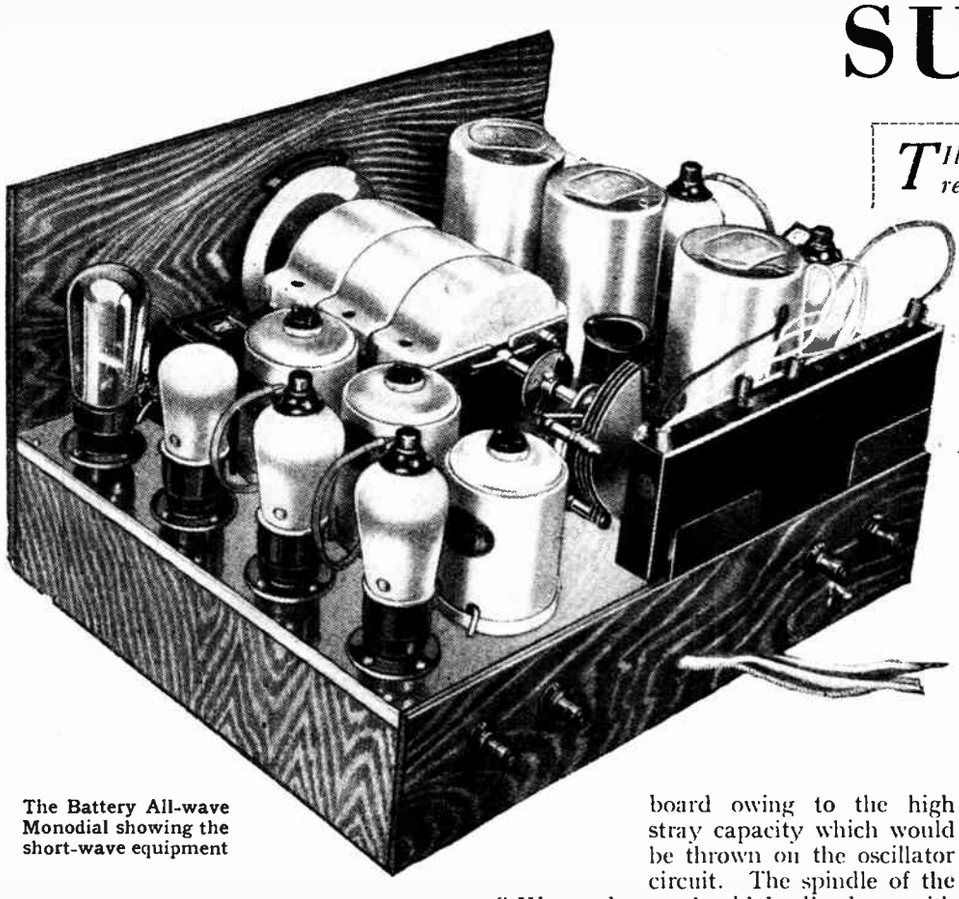
BOOKS RECEIVED

Photograms of the Year 1932. Edited by F. J. Mortimer, Hon. F.R.P.S.—The 38th issue of this popular annual contains nearly one hundred beautiful reproductions of pictorial photographic work from all parts of the world, with critical notes on many of the pictures. The editorial article deals fully with the year's work in photography, and there is, as in previous issues, an up-to-date Directory of Photographic Societies. Published by Iliffe and Sons Ltd. Price 5s. in paper covers, 7s. 6d. cloth bound, or 10s. 6d. half-bound leather, postage 6d. extra.

Photography Made Easy (3rd edition), by R. Child Bayley.—A book intended primarily for photographic beginners which starts with the assumption that the reader has no previous knowledge of the subject and gives in plain language a mass of useful instruction on apparatus and materials, choice and arrangement of subject, copying, enlarging, making lantern slides, etc., with advice to the novice on what to avoid. Pp. 251+viii. Published by Iliffe and Sons Ltd., London. Price 2s.

Théorie et Pratique de la Télévision, by E. Aisberg and R. Aschen.—Comprising the theory and progress of television with brief descriptions of the various systems and practical instruction to amateurs wishing to construct their own televisors. Pp. 236 with 216 diagrams and illustrations. Published by Etienne Chiron, Paris. Price 30 francs.

The ALL-WAVE MONODIAL SUPER



The Battery All-wave Monodial showing the short-wave equipment

THE popularity of the Monodial series of receivers has become so great that, in presenting the first battery model, it has been thought advisable to extend its utility by including the short wavelengths within the tuning range. In the issue dated January 27th appeared a discussion of the theoretical circuit, and the constructional details and operating notes are given in the present article.

Constructional Details of the New Battery Superheterodyne Tuning from 12.26 to 2,000 Metres

By W. T. COCKING

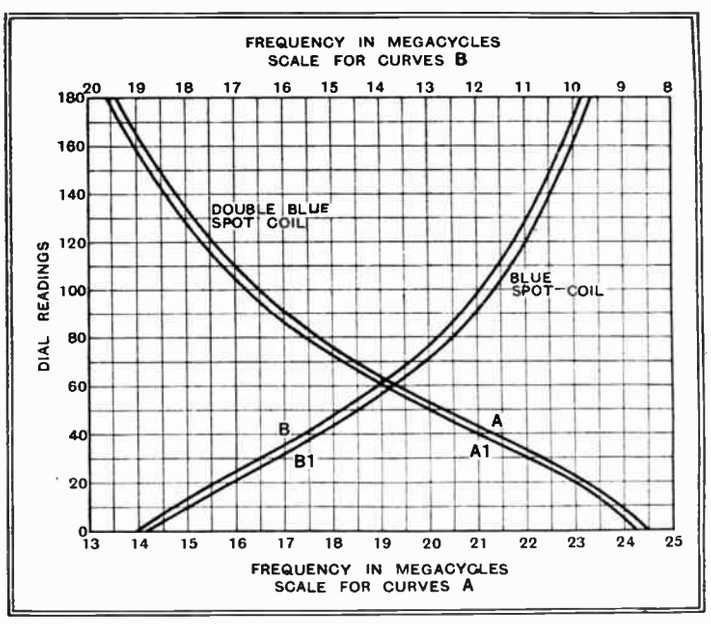
(*Concluded from page 63, January 27th issue*)

IN spite of the apparent complexity of the circuit diagram, reproduced in the earlier instalment, the receiver is essentially simple, and its construction is little more complicated than that of any normal type of superheterodyne. The apparatus is all assembled on a metal-covered chassis measuring 16in. by 12in., and supported on battens 3in. deep. This chassis may be obtained ready drilled, but if plain material be employed it will be necessary to drill eight one-inch diameter holes for the valve-holders and coil socket. As the aluminium covering to the plywood is quite thin, an ordinary centre-bit is satisfactory for this work.

The short-wave switches are obtainable as a ganged assembly, and can be screwed directly on to the under-side of the baseboard. As the terminals are not all readily accessible when it is in position, however, it is advisable in certain cases to attach the connecting wires before mounting it. The normal waveband coils, it should be noted, are supplied with shallow trays for spacing the screens from the baseboard. These trays should be inverted so that the bottoms of the coil cans are raised sufficiently to bring the switch spindle level with the on-off switch.

The compression condenser C4 in the oscillator circuit is raised about $\frac{1}{8}$in. above the baseboard by means of washers inserted under the fixing screws. It is important not to omit this precaution, as correct ganging will be impossible if the condenser be screwed directly on the baseboard owing to the high stray capacity which would be thrown on the oscillator circuit. The spindle of the S.W. condenser should be lined up with that of the gang condenser as accurately as possible, in order to reduce the strain on the flexible coupling unit.

The wiring is carried out with No. 22 tinned copper wire run in insulating sleeving, except in a few cases where screened leads are employed. The screened wire should not be of the heavily rubber-covered type, but should rather consist of large diameter sleeving with a braided metal covering, through which a length of No. 22 wire can be inserted. The covering, of course, must be earthed at the points indicated in the diagrams, and care should be taken to see that the ends of the braiding do not fray and come into contact with the inner wire.



Calibration curves for 10 to 19 and 19 to 24 megacycles.

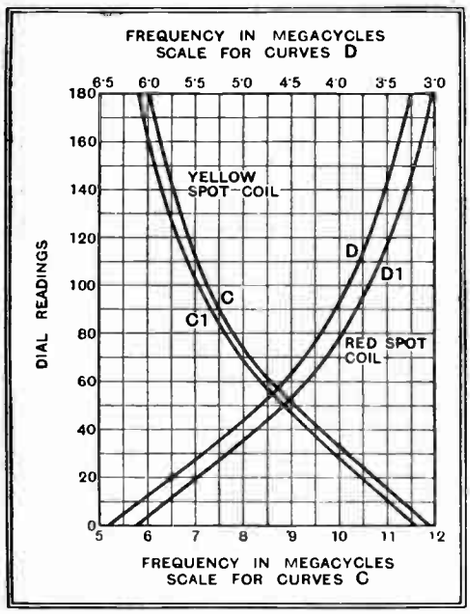
Checking the Voltages

It is recommended that the accumulator for the L.T. supply should have a capacity of 30 a.h. or more, since there is a drain of 1.15 amperes on it, and the 100 volts H.T. battery should be of the type rated for discharge at 16 mA. in order that economical working may be obtained. No deviations from the specified valves should be made other than to the alternatives given in the list of parts.

In order to check the operation it is wise to make sure that the various currents and voltages are in approximate agreement with the figures given in the table. It should be noted that these were taken with the volume control so set that the receiver was just not oscillating. Consequently, it is to be expected that the currents of the H.F. and first I.F.

The All-wave Monodial Super—

valves may differ somewhat in different sets. The first step in adjusting the receiver is to set the coils in each I.F. transformer at nearly their maximum distance apart,



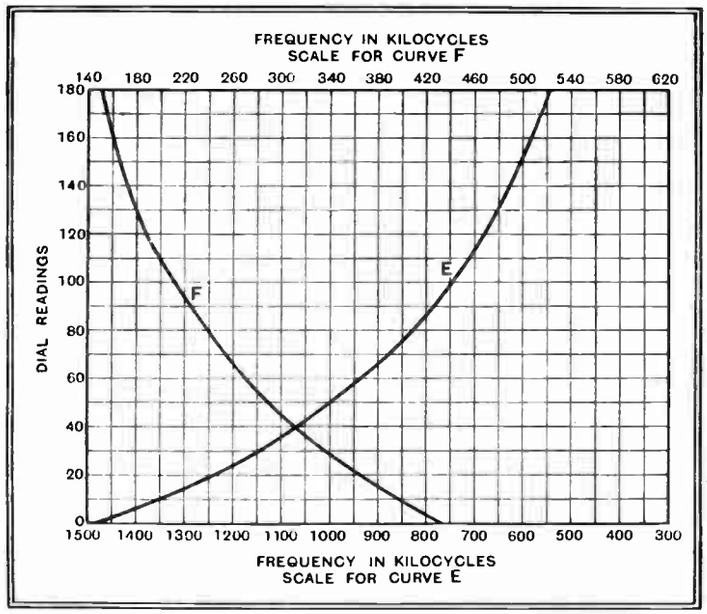
The ranges from 3 to 6½, and 6 to 11½ megacycles, are given in this figure.

and to replace the screening covers. A signal should then be tuned in, and the trimmers on each transformer adjusted for the maximum response. While doing this care should be taken to keep the signal very weak, by turning down the volume control, so that false results are not obtained through detector overloading.

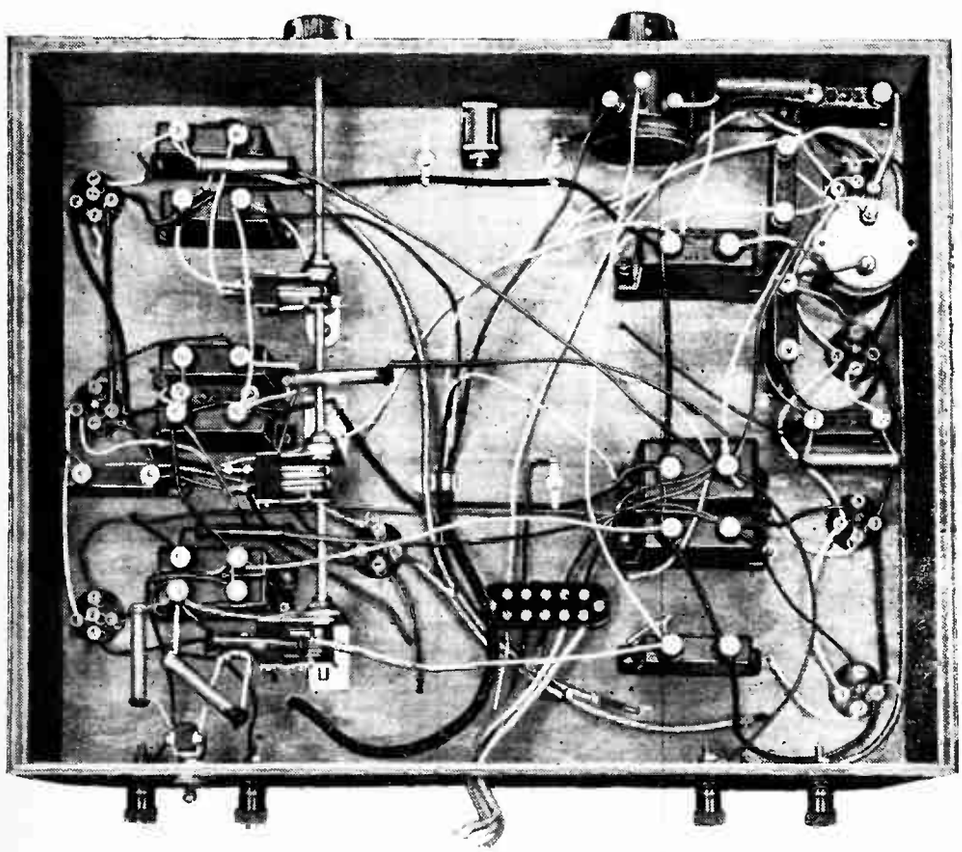
The ganging on the medium waveband comes next, and the switch in the screened coil assembly should be set for this range, and the S.W. switch set for reception on the normal wavebands; the local-distance switch should be set to Distance. A S.W. coil must be in its socket, of course, otherwise the anode circuit of the first detector would not be complete. The two trimmers on the pre-selector circuits, C1 and C2, should be practically fully unscrewed, and the oscillator trimmer unscrewed by about two complete turns. A station on as low a wavelength as possible must then be tuned in, and the two pre-selector trimmers adjusted for maximum response.

Should it be found that either trimmer has to be fully screwed home the oscillator capacity is too great, and the trimmer on this circuit must be unscrewed further. On the other hand, if it be found that the intervalve circuit trimmer C2 is fully unscrewed then the oscillator trimmer should be screwed up a little more tightly, and the ganging process repeated. The final result should be such that neither C1 nor C2 is fully screwed home nor fully unscrewed, but it should be noted that C2 will usually be very nearly at its minimum capacity.

Should it be found that the aerial circuit trimmer C1 has to be fully unscrewed, the cause is an aerial of high capacity. This does not necessarily mean a large aerial, for indoor aerials have often a higher capacity than efficient outdoor types. In these circumstances the size of the aerial can be reduced, or, more simply, a suitable value fixed condenser can be inserted in series with it. The best value of condenser should be found by trial, but some 0.0005 mfd. to 0.0002 mfd. will usually be the best; at very short distances from a local station, however, a somewhat smaller capacity may be found preferable.



These curves show the dial settings for the 550 to 1,500 and 150 to 430 kilocycles ranges.



Under-baseboard view of the receiver, showing the short-wave change-over switch.

The Long Waveband

Having settled points of this nature, and obtained correct ganging at the lower end of the medium waveband, the next step is to tune in a station on about 500 metres, and to adjust the oscillator trimmer while rocking the tuning dial backwards and forwards over a few degrees, until the optimum combination of settings be found. It is then necessary to return to the lower wavelength station, and to readjust the two pre-selector trimmers.

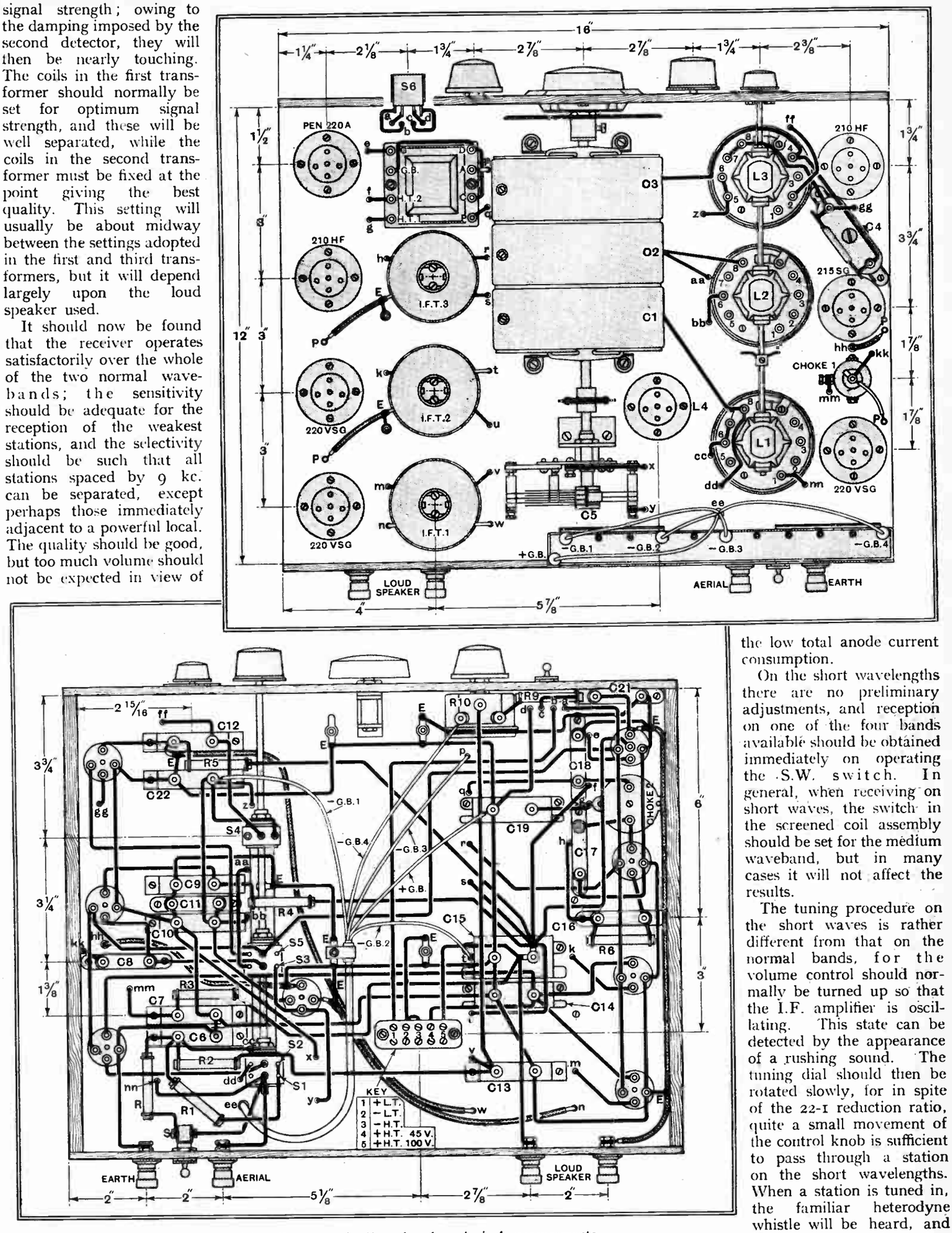
The long waveband is then due to receive attention, and an attempt should be made to tune in a station such as Huizen or Radio-Paris with the padding condenser C4 adjusted to about one-half of its capacity. Having found a station, C4 must be adjusted while rocking the tuning dial backwards and forwards until the optimum combination of settings is found.

The couplings of the coils in the I.F. transformers must now be adjusted to give the best compromise between selectivity and quality. In general, the coils in the third transformer can be set to a point slightly closer than that giving optimum

The All-wave Monodial Super—

signal strength; owing to the damping imposed by the second detector, they will then be nearly touching. The coils in the first transformer should normally be set for optimum signal strength, and these will be well separated, while the coils in the second transformer must be fixed at the point giving the best quality. This setting will usually be about midway between the settings adopted in the first and third transformers, but it will depend largely upon the loud speaker used.

It should now be found that the receiver operates satisfactorily over the whole of the two normal wavebands; the sensitivity should be adequate for the reception of the weakest stations, and the selectivity should be such that all stations spaced by 9 kc. can be separated, except perhaps those immediately adjacent to a powerful local. The quality should be good, but too much volume should not be expected in view of the low total anode current consumption.



The practical wiring diagrams, showing also the principal measurements.

On the short wavelengths there are no preliminary adjustments, and reception on one of the four bands available should be obtained immediately on operating the S.W. switch. In general, when receiving on short waves, the switch in the screened coil assembly should be set for the medium waveband, but in many cases it will not affect the results.

The tuning procedure on the short waves is rather different from that on the normal bands, for the volume control should normally be turned up so that the I.F. amplifier is oscillating. This state can be detected by the appearance of a rushing sound. The tuning dial should then be rotated slowly, for in spite of the 22-1 reduction ratio, quite a small movement of the control knob is sufficient to pass through a station on the short wavelengths. When a station is tuned in, the familiar heterodyne whistle will be heard, and the volume control can then

The All-wave Monodial Super—

be reduced until the amplifier stops oscillating.

Too much should not be expected at first on these wavebands, for atmospheric conditions are very variable, and change so rapidly and to such a great extent that periods when little can be received are by no means uncommon. Good reception in this country of the new British S.W. stations is hardly to be expected, and the band around 30 metres (10 megacycles) is probably the best to try at first, for it contains a number of strong morse stations.

It will be found that conditions vary throughout the wavebands at different times of the day, and it has been the writer's experience that wavelengths below 25 metres (12 megacycles) are of little use after dark. Daylight usually gives the best conditions below 20 metres (15 megacycles), but sunset seems to be the best time for wavelengths just around 20 metres. The higher wavelengths are much less affected, and it is common to find that on the 50 metre-band results are equally good day and night.

For the convenience of readers constructing this receiver, full-size blue prints are available from the publishers at 1/6 post free.

When operating this set on the short waves, it will be found that every station can be tuned in at two distinct settings of the dial. This is due to the use of an autodyne type frequency changer without signal frequency tuned circuits, and it does not lead to interference owing to the small number of stations operating on these wavelengths. Should second channel interference be found at any time, however, it can be avoided by changing to the other dial setting.

One other point in connection with the S.W. performance is worthy of mention.

TABLE.

Valve.	Anode Volts.	Screen Volts.	Bias Volts.	Anode and Screen Currents (Total).
Output :				mA.
Pen. 220 A	100	100	−9.4	4.5
2nd Det.				
210 HF	—	—	—	1
2nd L.F.				
220 VSG	100	45	−4.6	0.65
1st L.F.				
220 VSG	100	45	—	1.2
Osc. 210 HF and 1st Det.				
215 SG	—	—	−1.5	3.5
H.F.				
220 VSG	100	45	—	1.8
Total Current				12.65

Voltages left blank above are not accurately measurable with ordinary instruments.

When receiving a strong station, it may be found that there is a tendency for a low-frequency howl to develop. This is a common occurrence in S.W. sets, and is due to acoustic reaction from the loud speaker to the set. The valves may be partly responsible, but little difference has been observed between different types, and there is no doubt that it is chiefly due to the plates of the variable condenser vibrating in sympathy with the sound output of the loud speaker. The remedy is to mount the chassis on blocks of sponge rubber, so that it floats freely.

The receiver has been tested at about nine miles from Brookmans Park, and under these conditions it was found desirable to restrict the signal input somewhat by using a fairly small aerial. Owing to the high sensitivity, however, this did not reduce the number of stations obtainable, and all stations separated by 9 kc. or more from their neighbours were obtainable free from interference. The two usual points of second channel interference from the two London stations were found, but in spite of the close proximity to the locals, no undesired responses were found on the short wavebands. Tuning on all ranges is easy and definite; the shorter the wavelength, however, the sharper it appears, due to the increased frequency range covered by a given movement of the condenser dial.

On all ranges the quality reaches an equally high standard, provided that the volume is kept below the overloading point. The volume obtainable is naturally limited by the output valve, but is surprisingly large for the power consumed from the H.T. battery. In cases where current consumption is of little importance, as when H.T. accumulators are used, the anode voltage of the second detector and the pentode may be raised to 150 volts with advantage, but no more than 100 volts should be applied to the earlier valves. The calibration curves which accompany this article will be found of great help in locating stations, particularly on the short wave ranges, but it must not be expected that the settings for any particular receiver will exactly correspond.

A specimen receiver built to this design is available for inspection at 116-117, *Fleet Street, London, E.C.*4.

DISTANT RECEPTION NOTES

A GOOD many of those who indulge in the fascinating pastime of sitting up for America find little difficulty in identifying stations with certainty. Though by law the call-sign must be given every quarter of an hour (except when the continuity of an item would be ruined by so doing), it happens more often than not if there is any fading about a minimum period coincides with the opening of the announcer's lips.

Identification is made very much easier if the classification of stations likely to be heard in this country is known. American stations fall into three main groups: the National Broadcasting Corporation's (N.B.C.), the Columbia chains, and the Independent stations.

Here are some of the best heard stations arranged in their groups:—

N.B.C.	*Columbia.*	*Independent.*
WGY	KMOX	WKAQ
WENR	WPG	WJSV
KDKA	WJJD	
WBZ	WCAU	
WTIC	KFJF	
WTAM		
WHAM		
WIOD		

Once you have identified any station in either of the two big groups and made a note of its settings, identification of other stations giving the same programme becomes much easier. Again, stations not sending one or other of the S.B. programmes can often be identified, if the approximate wavelength to which the set is tuned is known, by the very fact that they are Independent.

Long-distance enthusiasts may have noticed a considerable increase in the strength of Ljubljana (generally known as Dubblejana), the Yugoslavian station on 574.7 metres. For some little time now this station has been giving more than double the output power shown against its name in the lists.

Some of those who ardently desire to add the Vienna Experimental Station (1,250 metres) to their logs have searched for it in vain and wonder whether it really is at work. It is nearly always in operation on Monday and Saturday evenings, and not infrequently on Wednesdays. The only real difficulty about receiving the station is that it is apt to be heterodyned by Boden on the one side and Baku on the other.

The new Madona station in Latvia has been in operation for some time now, but it is exceeding difficult to log owing to the fact that it is working on the well-occupied common-wave of 453.2 metres. Madona is a 10-kilowatt station, and the best chance of hearing it comparatively free from interference is to make a search just at dusk when the smaller fry which share the wavelength are not so much in evidence.

The 2.5-kilowatt Belgrade on 430.4 metres was fairly well heard during the autumn of 1932, but just now it is only occasionally that good reception is possible. We should, though, hear Belgrade well before the end of this year, for a new station rated at 50 kilowatts is being constructed.

Long-distance conditions are very good just now, especially when the glass is steady. If it is rising or falling rapidly atmospherics, though luckily not of the more violent kind, are sometimes experienced. Huizen on the long waves is in magnificent form, being almost as strong as Radio-Paris. Zeesen is well heard, and Motala has quite returned to strength. Kalundborg, curiously enough, is received best on days and nights when conditions are not too good. When they are good this station is apt to suffer from a heterodyne from the far-away Tashkent. The latter station is geographically more than 2,000 miles from the former, but the frequency separation is only 3.6 kcs.

Of the medium-wave stations Stockholm and Katowice continue to be first-rate, and others which seldom fail to give splendid reception are Prague, Florence, Budapest, Vienna, Munich, Brussels No. 1 and No. 2, Langenberg, Rome, Leipzig, Strasbourg, Poste Parisien, Göteborg, Turin, and Trieste.

D. EXER.

NEWS of the WEEK

No Listening "On Tick"

THE Postmaster-General has decided that he cannot allow wireless licence fees to be paid by instalments or by any easy payment system.

Exit the Coach Horn

FRENCH listeners are already growing tired of the new coach horn interval signal of *Poste Parisien*, and the station may shortly abandon it in favour of a few bars of patriotic music.

Flying Commentaries

THE Soviet broadcasting authorities have secured six 'planes equipped with short-wave transmitters to enable running commentators to give the listening millions aerial accounts of exciting land, sea and air happenings.

A Terpsichorean Technician

MADEMOISELLE TIMISCHOVA, a young Rumanian dancer, has been studying the electron theory, and, according to a correspondent, has recorded her impressions in a booklet entitled "Problems of the Ectogeneity and Endogeneity of the Rhythms of Matter."

The Eye of the Law

WHILE American amateurs are rejoicing in their new-found freedom, their cousins in France are watching apprehensively a new official Order which places all transmitting activities under the control of the Home Office Detective Department, which, incidentally, directs the new national radio police force.

Air Ministry Non-Stop Flight to the Cape

AS we go to press we learn of the departure from Cranwell of the long-range aircraft GEZAA on the Air Ministry non-stop flight to the Cape. The 'plane transmits every two hours at even hours on a wavelength of 33.71 metres, using the call sign GEZAA. Any amateur who happens to pick up a distress call from the 'plane is requested to communicate with the Air Ministry immediately either by telephone (Holborn 3434, Extension 383 or 370) or by telegram.

Broadcasting Electrical Music

THE evening of February 16th will be a great occasion in the history of "electrical music." A number of German stations, together with those at Warsaw, Vienna, Turin and Milan, Paris and Brussels, Oslo, Stockholm, and Helsinfors, will relay a concert from Berlin provided solely by electrical instruments. These will comprise two Neo-Bechstein pianos, three Trautoniums, one electrically played 'cello, and a similar type of violin, together with two Theremin instruments, an "electrochord" (a modification of the Neo-Bechstein) and a vibraphone.

Current Events in Brief Review

Japanese Radio Ban

AN order has been issued by the Tokio Government forbidding Japanese subjects to listen to wireless programmes other than those from Government stations. The step has been taken, it is understood, to neutralise alleged propaganda broadcast by the Soviet.

Automatic Gramophones

IN the article on the "Evolution of the Gramophone" which appeared in *The Wireless World* last week, the author, owing to the similarity between the names of two members of the staff of the H.M.V. Research Laboratories, unfortunately attributed the development of the first automatic gramophone to a mechanic named Tompsett instead of to one of the chief engineers, H. A. Thompsett, who has been responsible for over fourteen designs of H.M.V. experimental automatic gramophones.

The Electric Tongue

WHAT he calls the "electric tongue" was described by O. H. Caldwell, former United States federal radio commissioner, in a recent broadcast in which he showed how radio methods might be adopted to mix "future technocracy cocktails." Utilising photoelectric cells Mr. Caldwell declared that this "tongue" is an infallible guide in testing various kinds of drinks.

Sipping bottled water, for example, the "electric tongue" emits a low rumble through a loud speaker. As various other constituents are added, the musical notes rise in pitch—and enthusiasm. In one test a low note was first produced, but upon the admixture of bitters the tone rose immediately. When the final ingredients were added the tongue gave forth a peal of melody!

When Doctors Differ

WHETHER or not radio echoes are reflected from beyond the moon was debated recently by Professor Störmer and Dr. Van der Pol during a special visit of the former to the Philips Radio Works at Eindhoven, Holland. Prof. Störmer's theory is that radio signals travel far beyond the moon before being reflected to earth as echoes. On the other hand, Dr. Van der Pol explains the echo lag by the low signal velocity which he considers may occur in the electrified parts of the earth's atmosphere while the signals travel between the earth and the Heaviside Layer.

NATIONAL POLICE RADIO. In these photographs, which were taken at the Paris headquarters of the French Police radio system, are seen (above) an operator receiving a message from a mobile transmitter and (right) the new apparatus for the transmission of photographs and thumbprints.

Wireless for the Unemployed

THE secretary of the Halifax Wireless Society sends an interesting account of a scheme which has been successfully launched in that town for providing unemployed men with wireless facilities.

"After a certain amount of publicity," he writes, "meetings of unemployed men were held and about eighty were enrolled. We begged old parts and old sets, certain kindly disposed people gave us a little money. . . . The men are now able to enjoy wireless programmes round a good fire.

"They are also working in teams on the construction of simple two- and three-valve receiving sets. All the men being novices, their efforts are, of course, somewhat crude, but the sets will work."

Other towns might copy Halifax and bring comparative contentment to the unemployed at low cost.

Leicestershire Radio Week

A LEICESTERSHIRE Radio Week begins on February 27th. During the "week" industrial activities of the country will be prominently featured in the B.B.C. programmes. A number of interesting outside broadcasts have been arranged.

From D.C. to A.C.

THE battle which has been raging for more than a year between the Fleetwood Council and the local ratepayers' association has reached another stage with the receipt by the association of an encouraging letter from the Electricity Commissioners. The Fleetwood Council had declined to contribute to the cost of changes necessary in wireless receivers consequent upon the change-over in the supply from D.C. to A.C.

The Electricity Commissioners state that they "are advised that under the terms and conditions of their consent to the alteration in pressure and supply the undertakers (in this case the Fleetwood Council) cannot, speaking generally, disclaim all responsibility for the alteration or replacement of wireless apparatus."

Should the Fleetwood Council refuse to change its attitude the ratepayers may go to the Courts.

Southend Radio Show

AN amateur-built seven-valve receiver, comprising variable-mu high frequency, diode detector and paraphase resistance-coupled low frequency, won for Mr. A. H. Gregson the silver championship cup for the outstanding constructional exhibit at the Southend Radio Society's Exhibition on Saturday, January 28th. The exhibition, which worthily upheld the traditions of its eight predecessors, was attended by large crowds, who besieged both the trade and amateur sections. In the latter two transmitters—one of the ultra short-wave type—were included, as well as a number of up-to-date receivers and amplifiers. Music was supplied to all the stands in the trade hall by an amplifier built by the Society's chairman, Mr. H. H. Burrows, and giving an output of 18 watts.

UNBIASED

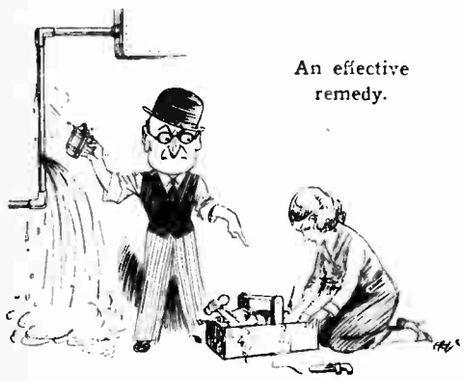
By

FREE GRID

Thawing by Short Wave

DURING the recent cold snap a respectable newspaper came out with a long tale of a wonderful short-wave transmitter invented by a well-known wireless amateur whereby he was not only able to thaw out his own water pipes, but had done a like service for his unfortunate neighbours. Sensational headlines such as "Short waves cause ice to boil" appeared.

It is only right, I think, to point out that I, together with many others, have used for a number of years a very simple



An effective remedy.

short-wave transmitter to thaw our pipes; the wavelength we invariably employ is round about 1/10,000,000 metres.

Phonographic Pick-up, Please

MOST people would expect to find that at a hospital devoted to the alleviation of nervous diseases there existed radio and other musical apparatus of the very latest type to sooth the jangled nerves of the occupants. I had occasion to visit one of these establishments a short time ago and was considerably astonished to see a wireless set and loud speaker which dated back to 1922. Actually the installation had been put in early in 1923.

In reply to my suggestion that the appalling travesty of music churned out by such a collection of junk would tend to retard rather than hasten the recovery of the patients, the matron pointed out that more often than not the installation was left standing idle at the special request of the patients. This, at any rate, showed a healthy state of mind among the patients and augured well for their recovery.

While the matron showed very little interest in modern radio reproduction, she brightened up considerably when I talked about gramophone records and asked if I could get her one of those "new-fangled" electrical pick-ups so that canned music could be distributed to the patients' headphones from a "talking machine" (*sic*) which an old patient had left to the hospital as a legacy.

Having readily promised to do so, I was greatly disconcerted to discover that it was a cylinder machine dating back to the early years of the century. I appealed to her to persuade the hospital governors to start a radio-gramophone fund, but all in vain; thus I am left to redeem my rash promise. If, therefore, any kind-hearted reader can tell me where to obtain a pick-up suitable for a cylinder machine with the usual "hill and dale" recording I shall be internally grateful.

Of the Earth, Earthy

NUMBERS of readers have from time to time written to voice a strong protest, with which I completely associate myself, at the superior attitude adopted by amateur transmitters and experimenters towards those "worms-of-earth," their less technical brethren. In particular, I wish to take exception to the term B.C.L. (broadcast listener) which they apply to all outside their immediate circle. It is really not the expression itself which gets my goat, but the way in which they use it. The expression may be a perfectly proper one, but if you have ever heard it used by a member of "the fraternity" you would, I think, understand my objection to it.

A superior attitude.

As one of the earliest transmitters myself, I feel that it is befitting that this gentle protest should come from me. At the same time, I fully realise that the pukka amateur has a perfectly legitimate right to puff out his chest somewhat, especially as much kudos which should by right accrue to him has been appropriated by radio manufacturers and official departments. Perhaps it is because of indignities suffered at the hands of these others that transmitters are led to adopt such a condescending air towards their so-called humbler brethren.

Well-merited self-abuse.

The Voice Off

HAVING been brought up very strictly in my youth and, in consequence, being somewhat of a stickler for the truth, I have little use for politicians. Usually I have found them, like certain "engineers" on duty at Olympia, full of gas, but incapable of answering any reasonable technical question.

I am not in the least sorry, therefore, at a misfortune which befell one of them recently at an election meeting in a neighbouring friendly State.

According to my informant, the meeting was held in a large marquee, and, as it was virtually impossible for any but those in the first two or three rows to hear the orator, loud speakers were provided. Not even the orator's bitterest enemy, however, could have anticipated the volley of well-merited self-abuse which issued from the loud speakers as soon as he had started to address the microphone. Those at the rear of the hall were not slow in responding to his invitation to pelt him with the flora and fauna that is customary on these occasions. In a twinkling of the eye the whole place was in an uproar, but not before my friend, who is an expert lip reader, had noticed that the words emanating from the loud speaker were not those being used by the candidate.

Eventually, after the meeting had been successfully broken up, it was revealed that the trouble was caused by a member of the opposition camp, who had hidden himself beneath the platform among the amplifiers and batteries and had merely disconnected the speaker's microphone and plugged in his own.

For His Country's Good

I AM compelled for business reasons to desert you all for a week or so in order to make a journey to an Eastern land. Indeed, when you read these words I shall already be gone, and you can, in the words of the poet, think of me "far across the Eastern seas."

I have as a matter of fact been entrusted with an extremely delicate mission about which I hope, with the Editor's permission, to have something to say on my return. But I must desist, for even as I write, the car is waiting to take me to Croydon.

"Banzai!" as they say in Salford.

SIMPLE TONE CONTROLLED 12-watt AMPLIFIER

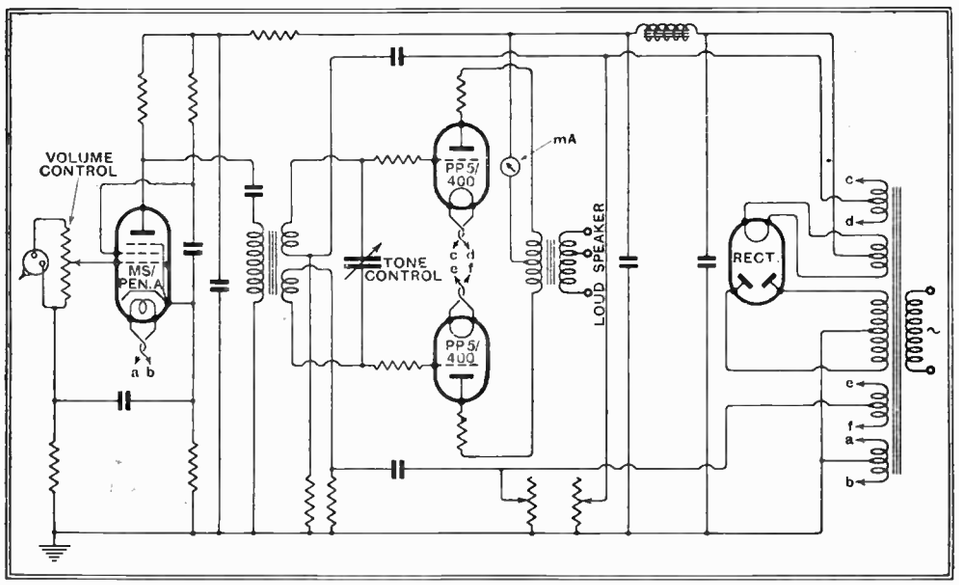
A Reader's Design for an A.C. Operated Equipment

THE amplifier briefly described in this note having proved most successful for public-address use and for providing dance music, a few details might prove of interest to readers of *The Wireless World* who have a number of components available that could be used or modified for the purpose.

WHEN it is required to provide music for dance halls and clubs, an A.C. amplifier such as that described by a reader in these notes will be found very satisfactory. The push-pull output stage with provision for careful balancing should ensure high quality of reproduction.

With the help of *The Wireless World* "Radio Data Charts" several additional filament windings were added to a mains transformer which on test were found to give the correct voltages. For experimenters who take an interest in working out problems of this nature for themselves these charts are a most valuable asset.

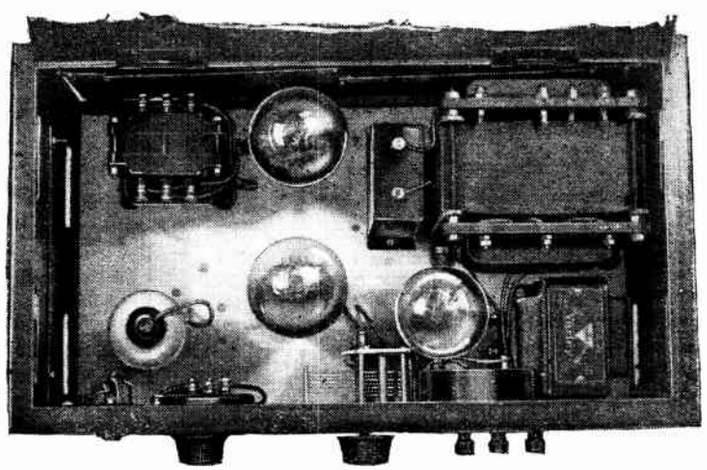
The unit embodies two amplifying stages; in the first an MS/Pen.A valve is employed, and this is coupled by a parallel-fed transformer to two PP5/400 valves working in push-pull. By employing separate filament windings for each output valve, and carefully adjusting the grid-bias resistances, a perfect balance is achieved, so that the maximum efficiency is derived from this stage.



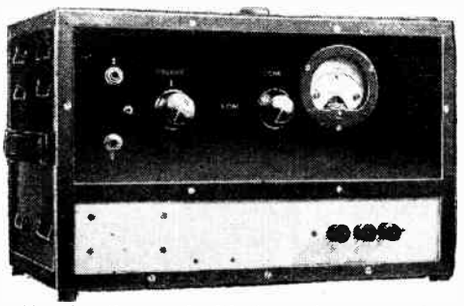
Circuit diagram of the tone-controlled amplifier.

The rising characteristic of the H.F. pentode used in conjunction with the tone control—which takes the form of a variable condenser connected across the secondary of the intervalve transformer—is very helpful when matching the output to various acoustic surroundings and for correcting gramophone recordings.

The components are mounted on a channel-section aluminium chassis with some of the smaller parts and the whole of the wiring carried underneath.



Plan view of the amplifier with lid removed.



Showing the panel with the various controls, including an adjustment for tone.

Since the valves dissipate a considerable amount of heat, a well-ventilated light steel case, having a hinged lid, was constructed to house the amplifier.

An amplifier of this type is capable of giving high-quality reproduction at great volume, and can be especially recommended for public-address work and the like. The output stage delivers between ten and twelve watts of undistorted power, which, when fed to a good moving-coil loud speaker, provides ample volume to fill a large dance hall accommodating between three and four hundred people.

CLUB NEWS

Loud Speaker Thrills

THE famous steam-pipe speaker manufactured for 6s. 6d. by a member of the Croydon Radio Society distinguished itself at the last meeting when, in competition with several of the latest makes, it proclaimed its supremacy in overall response, despite a slight resonance at 2,500 cycles. The evening had been devoted to comparative tests of fourteen loud speakers, all reproducing the same cinema organ record. A celebrated dual loud speaker all but secured first place, but it failed through being rather weak on top notes.

Hon. Secretary: Mr. E. L. Cumbers, 14, Campden Road, South Croydon.

Varnishing Laminations

READERS of *The Wireless World* are invited to the next meeting of the Institute of the Plastics Industry, on Monday, February 13th, at the Windsor Castle Hotel, Victoria, London, S.W., at which Dr. E. G. Haefely will read a paper on "Varnishes and Laminated Materials."

Hon. Secretary (London and District Section): Mr. J. Taylor, 6, Barn Way, Barn Hill, Wembley, Middlesex.

Tone Control

DR. HUGHES, of the Multitone Electric Company, gave a lantern lecture on the Multitone System of Tone Control at a recent meeting of the Southall Radio Society. The lecturer compared different methods of sound reproduction and showed how defects could be obviated by the Multitone transformer, designed to abolish to a great extent audio frequency attenuation.

Hon. Secretary: Mr. H. Rayner, 11, North Road, Southall.

The Superhet in the Factory

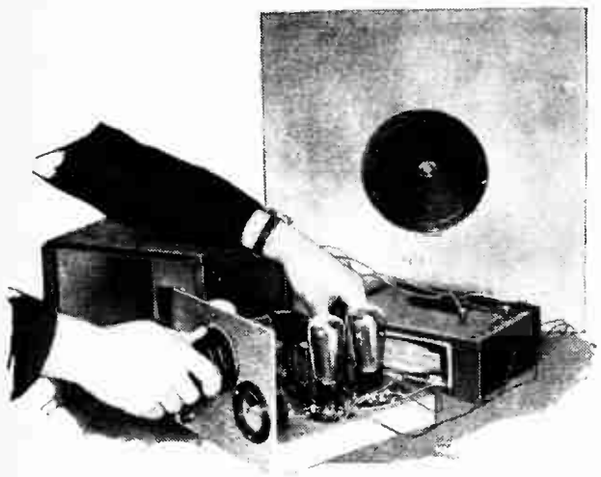
HOW a Murphy Superheterodyne A.8 receiver is tested piece by piece in the factory was entertainingly described in a lantern lecture by Mr. P. K. Turner at a recent meeting of the Catford and District Radio and Television Society. A practical demonstration of the instrument revealed impressive quality and selectivity.

Hon. Secretary: Mr. H. W. Floyd, 38, Como Road, Forest Hill, London, S.E.23.

More About The QUIESCENT PUSH-PULL TWO

Further Notes on Operation
Review of Components Submitted for Test

By W. I. G. PAGE, B.Sc.



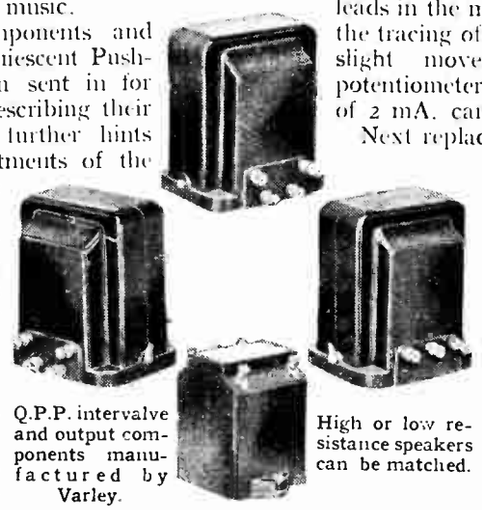
SINCE the first constructional receiver[1] embodying quiescent push-pull was described in this journal, a large number of intervalve and loud speaker transformers with characteristics suitable for this type of amplification have made their appearance on the market. From the wide variety of components available it is possible to make a choice to suit any Q.P.P. amplifier design with the knowledge that compromise can be avoided and that the circuit requirements will be fulfilled.

There are, for instance, a number of input transformers of different primary inductance and having ratios varying between 7 and 10 to 1, with the result that it is possible to apply the correct load to the detector valve in use and to ensure that the step-up ratio in the intervalve coupling is sufficient on full modulation to load two output valves in Q.P.P. Considerable attention has been given to the difficult task of matching the speaker to the Q.P.P. system, and manufacturers' efforts have now been well rewarded. The constructor will find on the market a series of output transformers with which it is possible to obtain powerful signals of good quality from almost any loud speaker with a speech coil impedance varying between the wide limits of 2 and 2,000 ohms.

Matching the Pentodes

Experiments with the Quiescent Push-Pull Two reveal that whereas the permanent-magnet moving-coil loud speaker is undoubtedly the best reproducer for Q.P.P. circuits, really very pleasing results can be obtained with moving-iron instruments, *provided that an output transformer of correct ratio be chosen.* A special intervalve transformer embodying a continuously variable tone control is being manufactured, and will be found of great assistance in correcting the attenuation of high notes caused by side-band cutting which occurs in the less ambitious type of set when reaction is pressed to the limit. Furthermore, it is generally found that at high volume levels speech is made much more natural if the tone is raised above that which is found the most pleasing with music.

Some twenty components and accessories for the Quiescent Push-Pull Two have been sent in for review, but before describing their performance a few further hints on the initial adjustments of the receiver may not be out of place, especially as the process of matching the Pen. 220A valves was dismissed rather briefly in the original article.



Q.P.P. intervalve and output components manufactured by Varley.

High or low resistance speakers can be matched.

First of all it should be made clear that the anode currents of the two pentodes must be matched by adjusting their individual auxiliary grid voltages, using the 1½-volt tappings provided in the special Q.P.P. high-tension battery, care being taken to switch off the set while making alterations. The common anode lead is taken to the maximum H.T. voltage tapping on the battery (130½ volts) and is left there permanently. Of the 16½ volts of the bias battery only 14 to 15 volts are required, and as a potentiometer control is provided, voltmeter readings of the actual bias applied are liable to be misleading. It is therefore necessary to judge the correct position of the slider by rotating its controlling knob to the extreme anti-clockwise position and then turning it back again about an eighth of its total travel—or about five minutes if the arrow on the knob is regarded as the minute hand of a clock.

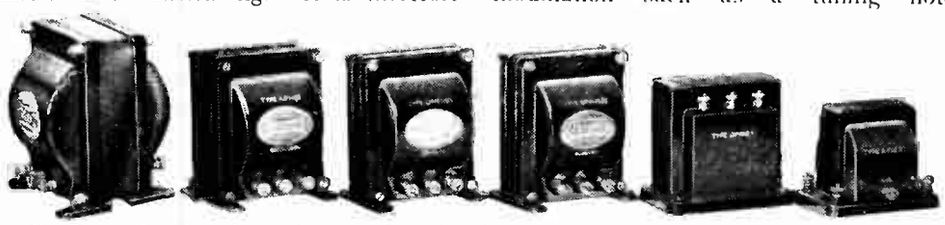
Having set the potentiometer and inserted the auxiliary grid wander plugs at random in the 1½-volt tappings near the maximum positive end of the battery, remove one pentode from its valve holder and take a reading on the milliammeter of the anode current of the remaining pentode. By adjusting the appropriate auxiliary grid tapping (the coloured leads in the multiple cable facilitate the tracing of wires) and by a very slight movement of the bias potentiometer, the correct current of 2 mA. can be made to flow.

Next replace the idle pentode in its holder and remove the brother valve, again changing the auxiliary grid voltage tapping until about 2 mA. flows, but this time the bias control must not be touched. As a final check the meter should show 4 mA. for the total quiescent anode current of the output stage.

The constant resistance shunted across the bias battery causes it to discharge at such a rate that the voltage drops in sympathy with the H.T. battery. It would be advisable after a month or six weeks to check the matching of the valves and to see that the total anode current is 3½ to 4 mA. Although the meter must be short-circuited to prevent distortion while the set is working, it will be found to be of considerable value as an indicator of resonance when a note of constant modulation such as a tuning note from a local transmitter is being sent out.

At about thirty miles from Brookmans Park the tuning note can be made to increase the standing current from 4 to 9 mA. before oscillation occurs. Those living nearer to this transmitter could probably obtain an increase up to 12 mA.

Of special interest to the constructor are the Q.P.P. components introduced by

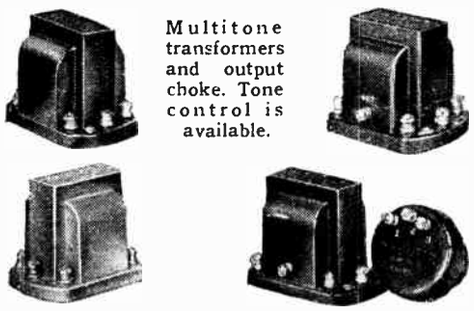


The Ferranti series of transformers, five of which have been specially designed for quiescent push-pull. The ratio of the output components ranges from 1.7 to 100 to 1.

[1] See *The Wireless World*, January 20th, 1933.

More About the Quiescent Push-Pull Two —

R.I., Ltd. This firm has been investigating the merits of this latest development in battery-economy circuits for some months, and the intervalve transformer designated the "Q" type, selling at 16s. 6d., including royalty, was found to load the output stage adequately. The ratio is 1 to 8, and, although a nickel-iron alloy is used for the core, up to 3 mA. may be passed through the



Multitone transformers and output choke. Tone control is available.

primary. The inductance of the latter is 30 henrys with no D.C. and 16 henrys with 2 mA. The output choke of this series provides four ratios, namely: 1 to 1, 1.4 to 1, 2 to 1, and 2.8 to 1, and enables almost any high-impedance speaker to be matched correctly. Each half-primary inductance is 70 henrys. This component is styled DY35, and sells at 12s. 6d.

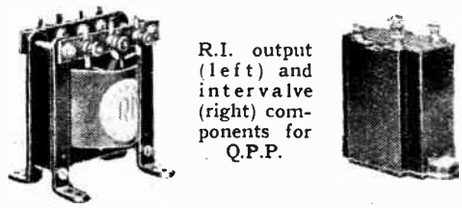
Q.P.P. Chokes

The Varley range of Q.P.P. components include one input transformer and three output "Transchokes," the latter providing every conceivable ratio for matching both high- and low-resistance loud speakers. On test the intervalve transformer gave an extremely good account of itself, and the high ratio of 9 to 1 ensures that the output stage just runs into grid current when the detector is giving its maximum output. This was easily proved by interposing a micro-ammeter in the common grid circuit. The primary inductance is 27 henrys with 2 mA. D.C. passing. The transformer is called the D.P.36, and sells at 17s. 6d., including royalty.

Of the output devices marketed by this firm mention should be made of the D.P.37 Transchoke, giving ratios of 3 to 1 and 42 to 1—the former for high-resistance speakers (or low-resistance speakers with built-in transformer) and the latter for the low-resistance type in which the speech-coil impedance is 10 ohms. The inductance of each half-primary is 13 henrys when D.C. peak currents of 26 mA. are passing. The price, including royalty, is 18s. 6d. Other Transchokes provide ratios of 3 to 1, 50 to 1, and 75 to 1.

There are a number of Multitone transformers for Q.P.P. available, and one of which is particularly interesting is styled PUCO 1/8, selling at 17s. 6d. By means of a special potentiometer connected across the centre tappings a continuously variable tone control can be obtained, which is a valuable asset, for instance, with gramophone reproduction, where needle scratch and excess of "Top" can be successfully reduced. There are many other uses for this control, and it was found that when the transformer was used in the Quiescent Push-Pull Two reaction could be pressed considerably farther than hitherto, as the attenuation of high notes due to sideband cutting could be compensated. The primary inductance is 30 henrys with 2 mA. D.C. passing. Other transformers in this range are the PU 1/8, selling at 15s., and a high-quality transformer styled D4, with a ratio of 1 to 9 with the remarkably high inductance of 40 henrys with 2 mA. D.C. The price is 17s. 6d. The "Puchoke" output-matching device provides ratios of 3 to 1, 1.5 to 1, and 1 to 1, and is intended for high-resistance speakers or for use in conjunction with speakers having a transformer already built in. Tested with a Blue Spot 66K high-resistance unit (moving iron), using the intermediate ratio, the output level was high and the quality of reproduction quite satisfactory.

Ferranti have just entered the market with a range of five Q.P.P. transformers, of which illustrations appear herewith. Unfortunately, they arrived just before going to press and there has not been sufficient time for a complete test, but from the enviable reputation gained by this firm for the designing of push-pull transformers it can safely be assumed that the performance will be entirely satisfactory. Model AF11C is an intervalve transformer with a ratio of 1 to 10, and an inductance of 50/27 henrys when the primary current is 0 to 10 mA. The price is 34s., including royalty. There is an inexpensive input transformer known as the AF12C, with a ratio of 1 to 9, selling at 15s. In the output transformers type O.P.M.13C is interesting, as ratios of 1.7, 2.7, and 4.5 to 1 are available, making the component suitable for use with high-resistance speakers or with the low-resistance type having a built-in transformer. The price is 26s. 6d., including royalty. Another type—O.P.M.11C—in this range caters for low-resistance speakers, and provides ratios of 35, 56, and 100 to 1.

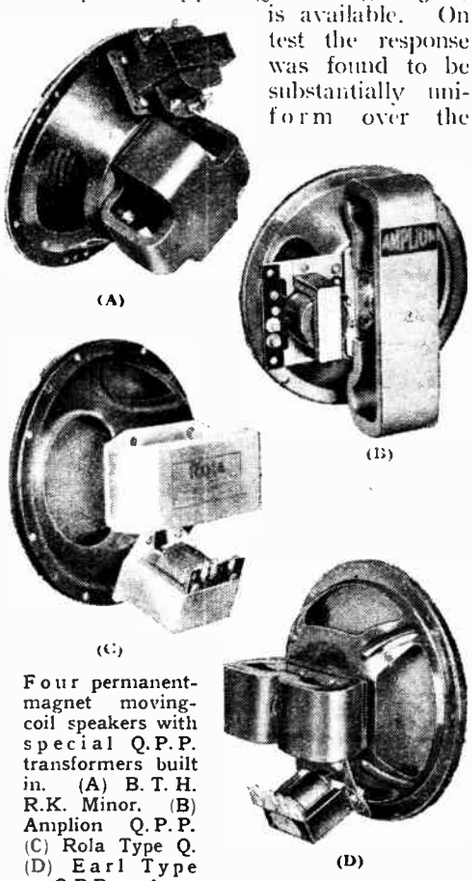


R.I. output (left) and intervalve (right) components for Q.P.P.

Four permanent-magnet moving-coil loud speakers with special Q.P.P. transformers built-in have been received for review. In each example the speaker-transformer combination has been designed to impose a load of about 18,000 ohms at approximately 256 cycles. In the case of the B.T.H. R.K. Minor speaker the transformer has a very liberal core, ensuring high efficiency. The volume was rather greater than with any other speaker tested, and the tone was distinctly pleasing. Slight predominance of upper frequencies existed, but this was at once rectified by increasing the value of the condenser in the compensator circuit across the transformer primary. It is called the Q.P.P., and the price is 57s. 6d.

New Speakers

The Amplion speaker in this range (type Q.P.P.) gave an entirely satisfactory performance and was especially pleasing with music, the bass notes being well reproduced. The pentode compensator circuit with the original values unchanged should be used in this case. The price of the speaker is 39s. 6d. A Rola speaker, type "Q," selling at 52s., is available. On test the response was found to be substantially uniform over the



Four permanent-magnet moving-coil speakers with special Q.P.P. transformers built in. (A) B.T.H. R.K. Minor. (B) Amplion Q.P.P. (C) Rola Type Q. (D) Earl Type Q.P.P.220A.

musical range, and the standard compensator was used.

Electriclocks and Radio, Ltd., are marketing the "Earl" Q.P.P.220A speaker embodying a transformer with nickel-alloy core. The reproduction is brilliant, and speech is exceptionally natural, but with musical items it was found that the value of the capacity in the compensator circuit should be increased from 0.005 mfd. to 0.01 mfd. At 35s. this speaker represents good value for money. A new Q.P.P. high-tension battery—the Ever Ready Type W.1198—has just made its appearance, and is tapped at the appropriate $1\frac{1}{2}$-volt intervals. The price is 12s. 6d.

It is interesting to note that this specialised type of push-pull output is finding its way into commercial receivers, and among the pioneers who have adopted this design may be mentioned the Consolidated Radio Co., Ltd.

It is hoped to deal shortly with the advantages of triodes in Q.P.P.

EKCO SH25 SUPERHETERODYNE

A Self-contained Station-calibrated A.C. Receiver

THE popularity of the superheterodyne has now established itself as firmly in the small, self-contained receiver as in the more ambitious instrument of the radio-gramophone class. In spite of its apparent complexity when compared with a straight receiver, it is actually easier to build a superheterodyne of good performance than a straight set within the confined space of the usual cabinet, for it is far less prone to instability, and it does not suffer in the same way by having its components placed in close juxtaposition. Thus, while the performance obtainable from this type of set is particularly pleasing to the user, the latitude which is permissible in the layout commends it to the designer, so that it is small wonder that the straight set now appears to be slowly dying.

Five valves are employed in the Ekco superheterodyne, and it may be said at once that a very satisfying performance has been obtained. The quality of reproduction is definitely good, and the high notes are very well reproduced. The bass is present, but appears at a somewhat lower level, owing to the small baffle area provided by the containing cabinet. It is good to see a design, however, in which the temptation to include a false bass by speaker and cabinet resonance has been resisted, and the net result is very pleasing quality with no trace of boominess.

Background Noise Absent

The selectivity is well up to the standard of the average small superheterodyne, and stations up to about 18 kc. from the local can be received without interference. Since stations closer to the local than this are always apt to be spoilt by sideband heterodyning, the selectivity may be said to be sufficient for most practical purposes.

The sensitivity, too, is entirely adequate, and, in fact, during the tests the volume control never had to be set to maximum for even the weakest signal. Background noise is low, and whistles—the chief defect of many superheterodynes—are almost entirely absent. The two usual points of second channel interference are found for the two locals, of course, but other whistles are very few in number indeed. The volume control, in conjunction with the Local-Distance switch, offers a smooth, continuous, and distortionless variation of volume from maximum to silence on all stations, including the locals, and, in fact, the range of control is unusually wide.

Mechanically, the receiver is very well constructed indeed, and the steel chassis is exceptionally rigid, while the layout of components and the general design bear witness to considerable thought on the part of the designers. The cabinet is of bakelite, and the well-known Ekco tuning scale is fitted around the speaker fret. This, of course, takes the form of a circular strip on the outside of the speaker cone, over which a chain-driven pointer travels to indicate, by wavelength and by name, the station to which the set is tuned. The accuracy is reasonably good, and no difficulty was found in identifying stations by the dial reading, even although the pointer did not always happen to coincide exactly with its marking.

Electrically, the circuit is arranged as a variable-mu first detector, preceded by a two-stage inductively coupled band-pass filter for the pre-selector. Individually screened coils are not used in this filter, and the coupling is by mutual inductance, for the primary and secondary are actually wound end to end on the same former—a very simple and effective arrangement. A separate triode oscillator valve with a tuned anode circuit is used, and the coupling to the first detector is arranged by including the oscillator grid coil in its cathode circuit. The oscillator coils are completely screened, and, moreover, a screen is fitted to the oscillator valve itself.

A single variable-mu H.F. stage is used, and the two I.F. couplings are each of the band-pass type, there is thus a total of four tuned I.F. circuits, and it is these which provide chiefly the adjacent channel selectivity. Here, again, complete screening of the circuits is provided, both for the purpose of ensuring complete stability and of preventing the direct pick-up of morse working on the wavelength to which the I.F. amplifier is tuned. Indeed, so important has this latter feature been deemed that a special tuned rejector circuit has been included in the aerial circuit to prevent such signals from forcing an entry by this path.

The second detector is another triode acting on the power grid principle, and it is resistance-transformer coupled to the pentode output valve, which in turn feeds the moving-coil loud speaker in the usual way through a transformer. The speaker field is energised from the mains equipment, where it also serves as a smoothing choke. The speaker field alone, however, is not relied upon for smoothing, and an additional choke is included, together with large-capacity electrolytic condensers, and the net result is an exceptionally low level of hum in the output. A metal rectifier is used to provide the H.T. supply.

Sockets are fitted to the rear of the chassis for the connection of an additional external loud speaker and also for a gramophone pick-up, while a plug permits a mains aerial to be employed. There are two main controls on the front of the cabinet—the tuning control and the volume control—and these are provided with large-diameter knobs. Concentric with these knobs are two smaller controls, one operating the Local-Distance switch, and the other the combined wavechange and radio-gramophone switch. The mains on-off switch is fitted to the rear right-hand side of the chassis and is readily accessible. There is in addition a tone control switch, which connects a filter circuit to the second detector valve and permits the higher musical frequencies to be severely attenuated when heterodyne whistles and atmospherics render such a course advisable.

The appearance of the receiver, with its moulded bakelite cabinet and its unobtrusive tuning scale, is particularly pleasing, and is calculated to satisfy the tastes of the majority as is also the oxydised metal speaker grille.

FEATURES

General.—*Five-valve A.C. superheterodyne with built-in moving-coil loud speaker. Special station indicating and wavelength calibrated tuning scale. Provision for the use of an external speaker and for the connection of a gramophone pick-up. A mains aerial is provided.*

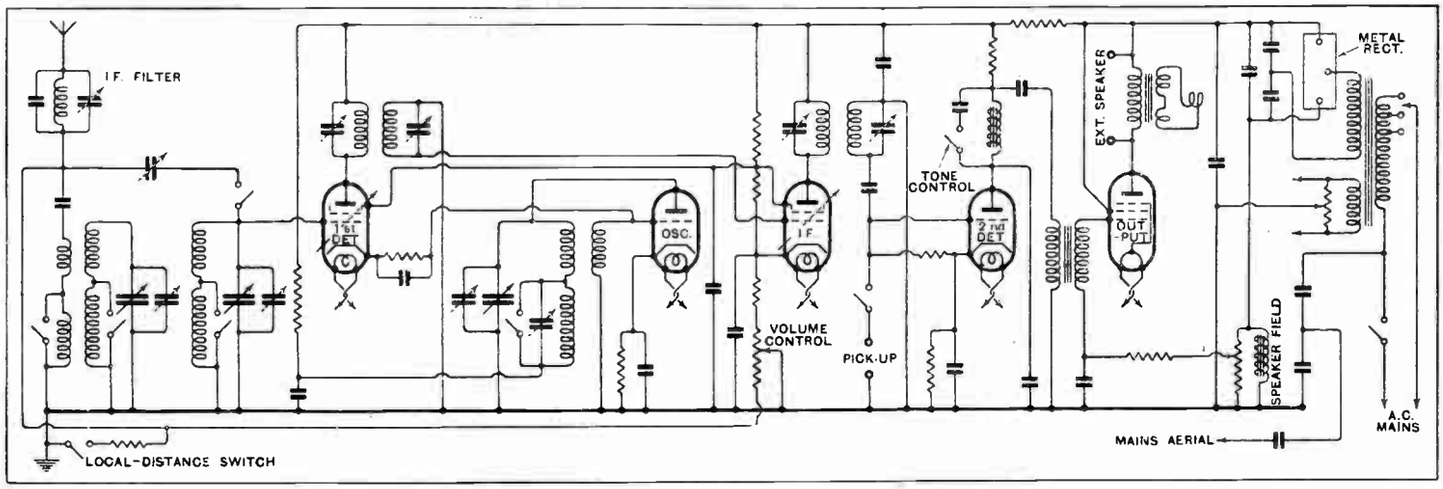
Circuit.—*Variable-mu first detector and I.F. stages, with a separate triode oscillator and a triode second detector; pentode output. The pre-selector is coupled by mutual inductance, and a special rejector is included to prevent I.F. interference.*

Controls.—*(1) Tuning control. (2) Volume control. (3) Local-distance switch. (4) Combined wavechange and radio-gramophone switch. (5) Tone control switch. (6) Mains on-off switch.*

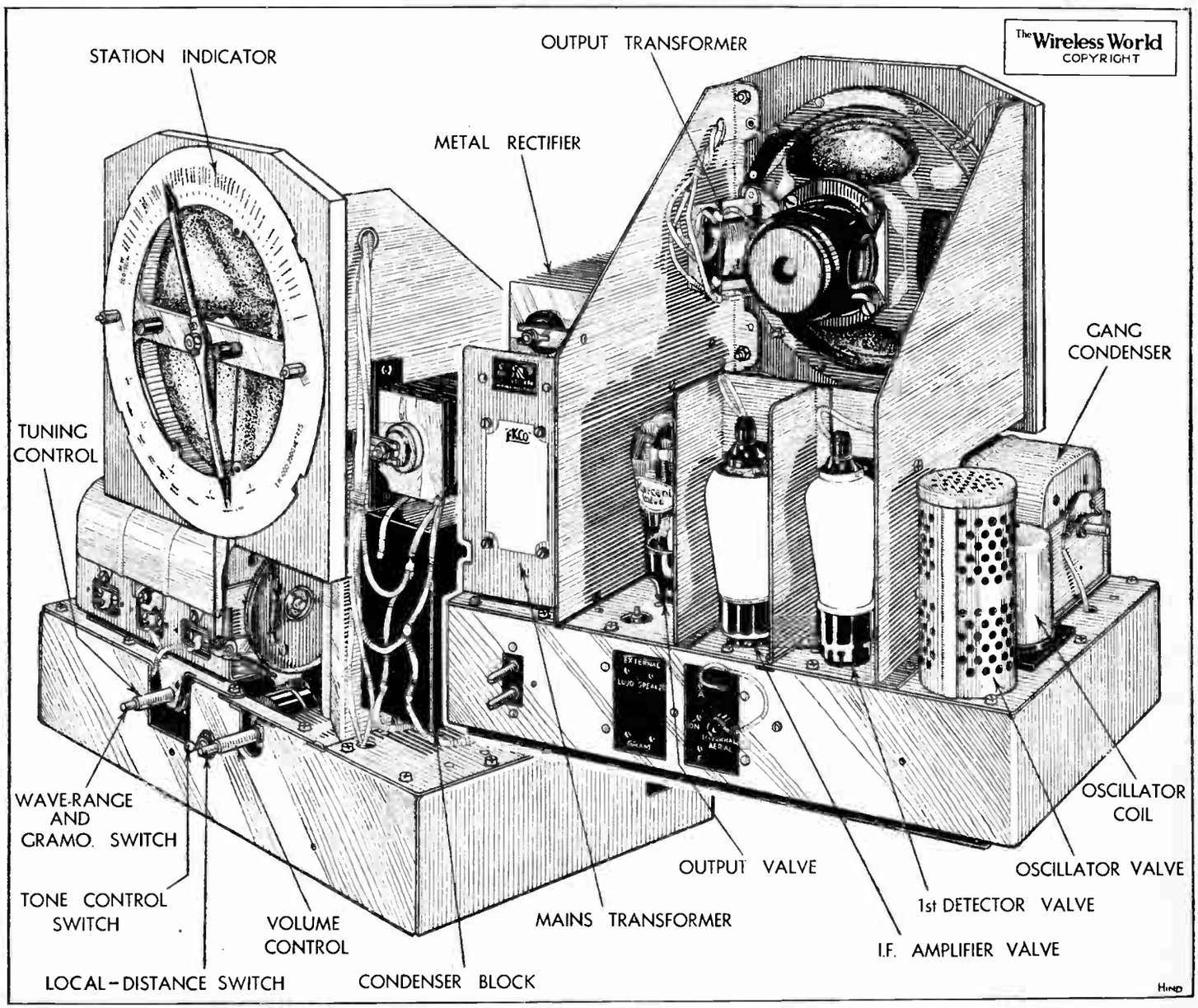
Price.—*21 guineas.*

Makers.—*E. K. Cole, Ltd., Ekco Works, Southend-on-Sea.*

Modern Superheterodyne Practice



Complete circuit diagram. Points of interest are a variable-mu first detector, a rejector to prevent I.F. interference, and a two-valve frequency changer.



Two views of the chassis, which is of robust all-metal construction.

Practical HINTS AND TIPS

AIDS TO BETTER RECEPTION

IT is not usually recommended that variable condensers should be dismantled or in any way tampered with; this is distinctly a specialist's job, and many of us who rather fancy our skill in making critical adjustments to wireless apparatus have come badly to grief when attempting this sort of work.

Kill or Cure

If one is unfortunate enough to have an out-of-date ganged condenser with inaccurately matched sections the most certain and obvious cure is to replace it by a modern component,

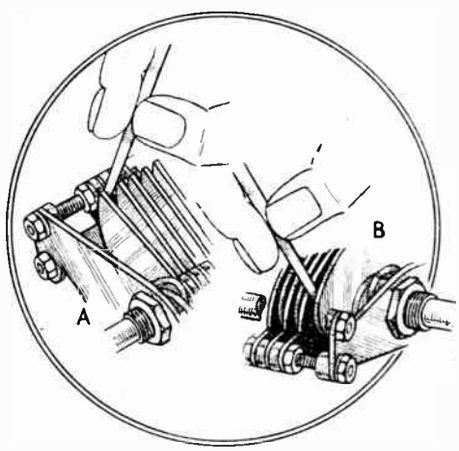


Fig. 1.—Correcting errors of alignment in ganged condensers by displacing the end vanes.

of which all the sections can be depended upon to have the same capacity at corresponding angular settings of the rotors. But, before scrapping a fairly expensive piece of apparatus there is a natural temptation to try to improve matters; there is no harm in making the attempt if it is realised that it will very possibly fail, and so, after all, a new condenser will be required. A set with a tuning system that is badly out of alignment is always a source of dissatisfaction to its owner.

This note relates to condensers with solid plates, and not to the more modern type with segmented end vanes, which are accurately matched at various angular settings by the makers. For example, it may be found that one of a series of cascade ganged circuits runs out of tune with the others as wavelength is progressively increased, and requires less trimming capacity at the higher wavelengths to maintain resonance. In these circumstances it is by no means impossible to effect a great improvement by reducing the rate of capacity increase of the condenser section which controls that particular circuit. If one of the rotor end vanes overhangs the stator bank this vane may be bent outwards, as shown in Fig. 1A, so that, instead of being parallel with the rest of the vanes, it makes a more or less acute angle with them. To arrange matters so that the rate of capacity increase be *reduced*, a little thought will show that it is the "tail end" of the rotor plate which must be bent outwards.

It is equally possible that the defect in ganging may manifest itself in a different way, *more* trimming capacity being required for the mis-aligned circuit as wavelength is increased. If so, the tail end of the rotor plate may be bent inwards as far as is consistent with the avoidance of a short-circuit, and at the same time the tip or entering edge is bent outwards, as shown in sketch B.

When neither of the rotor end vanes overhang the stator it is just possible to make a similar adjustment by bending one of the stator vanes. To do this the vane to be adjusted must be cut through with a small saw or file at one of its points of attachment.

With a little skill and patience—and perhaps, one should add, with a little luck as well—it is possible to make a remarkable improvement in matching.

IT has lately been found that the type of filter circuit shown in Fig. 2 (*a*) is especially likely to aggravate the effects of induced electrical interference in the aerial-earth circuit. Careful consideration will show that the decoupling resistance R is effectively in series with this circuit, and that any voltage built up across the resistance will be transferred to the grid of the first valve. The coupling condenser C, though in parallel with the resistance, will usually have such a low capacity that it will not act as an effective by-pass to impulses of low frequency.

Intensifying Electrical Interference

In one case, where electrical interference was particularly annoying, it was found that matters could be greatly improved by isolating the aerial circuit by providing a separate winding, as in Fig. 2 (*b*). The use of a separate aerial winding is also to be advocated from other points of view, and for the particular trouble under consideration affords the most effective cure. But, as an alternative, the expedient of reducing the value of the resistance R may be tried; a resistance of a few hundred ohms, or even 1,000 ohms, in place of the higher value usually specified, may be quite effective, and is certain to reduce interference brought about by induction.

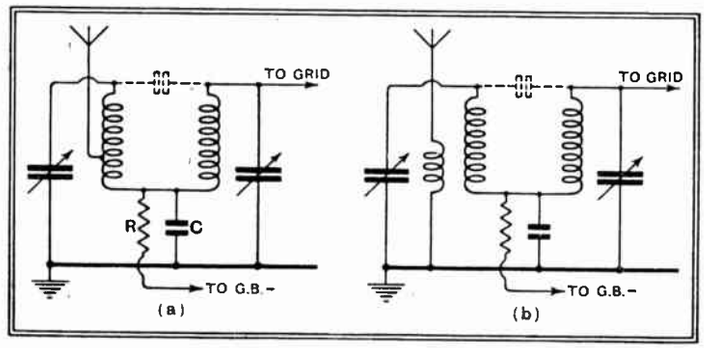


Fig. 2.—A separate aerial winding (diagram (b)) is generally preferable to a tapped connection. The arrangement shown in diagram (a) is likely to intensify certain forms of electrical interference.

IN many devices for tone correction and the suppression of heterodyne interference air-cored inductances of half a henry or so are often required. The constructional details of these components have from time to time been described; in order that the finished choke may be of reasonable size it is usual to specify enamelled wire.

Winding Air-cored Chokes

It is worth while to point out that the effect of even two or three short-circuited turns will be serious, and so the greatest care should be taken to avoid damage to the covering of the wire. If a joint is necessary it should be carefully soldered, and then the exposed metal should be covered with Empire cloth or some other suitable form of insulation.

IT has been found that almost any modern three-electrode valve works well as a diode detector, and that there is surprisingly little difference in the performance of the various types. For a given load (or coupling resistance), however, low-impedance valves are rather more efficient, but the difference is seldom enough to be audible.

Valves for Diode Detection

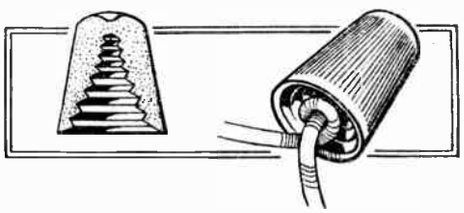
Certain valves of very low impedance have an exceptionally high inter-electrode capacity, and so may appear to be more effective diode detectors, because, in effect, the capacity of the valve is additive to that of the by-pass condenser already provided. There is a risk that any gain in sensitivity obtained by using one of these valves will be off-set by a slight loss of high notes.

Practical Hints and Tips—

Thimble Connectors

DURING the last two or three years so-called thimble connectors have been widely used in electrical wiring. These devices, which are shown at approximately their full size in an accompanying sketch, are made of porcelain; the internal taper of the cone is threaded, the edges of the threads being sufficiently hard and sharp to cut into any soft metal like copper.

At first sight these devices would not appear to have any application to the construction of wireless sets, but a trial shows that they are surprisingly useful and effective for making alterations to internal wiring. Two or more wires to be joined together are merely inserted in



Porcelain thimble connectors, though primarily intended for ordinary electrical wiring, are particularly useful for making semi-permanent alterations to the internal connections of a receiver.

the cone, which is then given a few turns in a clockwise direction; by this action the wires are twisted closely together.

In addition to providing a good electrical connection, the porcelain cone also acts as an insulator, provided that the bared ends of the wires to be joined together do not protrude beyond the base.

This method of connection probably shows to best advantage when space is limited; any of the classes of wire customarily used for internal connections can be joined together, and, for example, it is possible to connect flexible stranded leads to each other or to solid wires. Even when soldered connections can be made, the addition of a thimble provides at least as good insulation as a wrapping of insulating tape, and is easier to put on.

Quiescent Push-pull

WHEN the subject of Q.P.P. amplification with output pentodes has been discussed in the pages of this journal it has been emphasised that the primary of the L.F. coupling transformer should be shunted with a resistance of about 75,000 ohms in order to avoid risk of damage due to voltage surges. Those who intend to use this system, but propose to employ a resistance-fed intervalve transformer, will be interested to know that with this system the shunt resistance will no longer be necessary. The presence of the normal anode-coupling resistance, which is effectively in parallel with the transformer primary, will prevent the development of unduly high voltages, even though the circuit be interrupted by withdrawing the detector valve from its holder while the set is in operation.

A Station Finder Hint

IT will sometimes be found that more clearly defined absorption (or reduction of the strength of incoming signals) is obtainable when the aerial connections to *The Wireless World* Station Finder (January 13th) are reversed. This reversal is effected by joining the aerial lead-in to socket R, and the receiver aerial terminal to socket A1 or A2, depending on coupling requirements.

It has also been observed that the calibration of this device may tend to alter slightly after the first two or three days' use. The variation will usually not be serious enough to cause ambiguity between stations, and is probably due to "bedding-down" of the condenser bearings, and to the fact that the sweep of the moving vanes is slightly increased in use. If this effect is noticed it is as well to re-set the zero adjustment in the manner described in the original article; this will only take a few minutes. At the same time, the condenser dial should be re-set if necessary, so that the zero mark on the dial corresponds accurately with the datum line when the moving vanes are completely disengaged from the stator.

NEW USE FOR PHOTOCELL

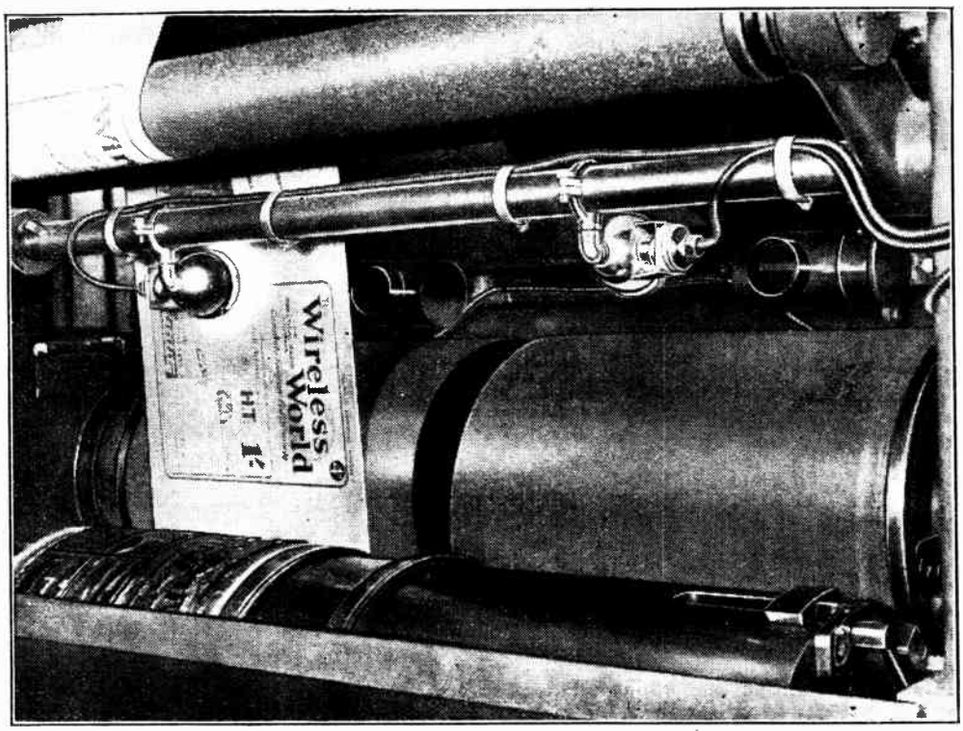
Averting Damage to Printing Machinery

ONCE more the photo-electric cell has been called upon to replace the fickle "human element"—this time in the service of printing. In co-operation with the General Electric Co., the Cornwall Press Limited, printers of *The Wireless World*, have now introduced the photo-electric cell as a "watcher" to prevent the damage so often caused to printing machines by paper breakage.

A photocell is utilised on each web and the main amplifier with its relay is fitted at a convenient point away from the machine.

In a recent demonstration given to show the effective action of the photo-electric control, the whole machine came to rest completely in about two seconds after the fracture of the paper.

Without any such device a breakage will, if unobserved, often cause the loose web to wind itself round the cylinders so that the printing plates may become damaged, for, unfortunately, it is impossible to be certain that a breakage will be detected in time by the operators. In addition to the cost of the actual material damage the waste of time involved in removing and replacing any damaged parts is very expensive. The photocell averts the danger in the most practical and convincing manner possible.



A picture demonstrating at a glance how the photo-electric control operates in a modern printing machine. So long as the paper intercepts the beam of light the machine continues to operate. If the paper breaks, the beam is thrown on the photocell, which actuates a valve relay and the machine is stopped.

In this particular installation a small lamp is fitted to illuminate one side of the sheet of paper as it passes through the machine; the photocell is in a specially designed housing on the opposite side of the sheet. Normally, the paper obstructs the passage of the light and the photocell is kept dark, but immediately a fracture occurs, light reaches the cell, the valve relay contacts close and bring into operation the mechanism which stops the machine.

BROADCAST BREVITIES

By Our Special Correspondent

New Blood in Vaudeville

MR. LANCE SIEVEKING, who last September took over the direction of broadcast vaudeville in order to devise new ways of putting us in a good humour, will relinquish the task next month. Everyone at Broadcasting House is asking who will succeed him.

Advice on Variety

At first it was believed that Eric Maschwitz would desert his editorial chair and take full command of vaudeville, but I understand that a compromise is likely to be effected, with Maschwitz as vaudeville consultant, adviser, or what you will, and that trusty servant of the public, John Sharman, in actual charge.

John Sharman

Sharman's name is little known to the listening public, but the truth remains that he has been responsible for more successful vaudeville and variety shows in the last few months than anyone else. On several occasions the Governors themselves have registered satisfaction at a particular vaudeville show, and in each case it has subsequently been discovered that Sharman was the originator.

Vaudeville v. Opera

Broadcast vaudeville has certainly taken up the challenge recently thrown out by studio opera, with which Gordon McConnel is hoping to make Britain "opera-conscious," at the expense (one supposes) of vaudeville.

I understand that within the next few weeks vaudeville devotees may be entertained by a famous Irish tenor whose name is a household word all over Europe and America.

A Dismal Audition

A friend of mine gave moral support the other day to an unfortunate member of the B.B.C. staff whose job it is to hold preliminary auditions of candidates for the vaudeville microphone. There is a wealth of tragedy in that word "preliminary," for auditions such as these are intended to meet the first onslaught of aspirants and decimate their ranks, leaving a few lucky ones to meet the gods on Olympus.

During the audition in question all thirteen "turns" were turned down. This sort of thing goes on from day to day.

Dr. Boult to Conduct Vienna Broadcast

A SYMPHONY Concert will be relayed to London Regional listeners on March 2nd, from Vienna, in co-operation with the Austrian Broadcasting Company. Dr. Adrian Boult, Music Director of the B.B.C., will conduct the Vienna Philharmonic Orchestra, the programme consisting of works by Mozart and Brahms, as well as some English works, the composers represented being Elgar and Holst. Dr. Boult was invited to direct this concert as guest conductor in the Viennese Orchestra's big winter series.

A Harry Tate Station

DAVENTRY 5XX is the old crock among European broadcasting transmitters, and breakdowns are now so frequent that the station has quite a Harry Tate atmosphere.

Naturally, the B.B.C. is unwilling to purchase new components for a station whose days are numbered, so I am afraid that 5XX listeners will have to possess themselves in patience until Droitwich relieves the strain.

Not What it Seemed

A photograph reached me last week showing what appeared at first glance to be an early Victorian broadcasting station with a heavy timber lattice mast and a hutchlike transmitting room at the base. Closer inspection revealed that the contraption was a primitive boring machine which is tapping the ground below the Droitwich site to discover whether mineral salt deposits are likely to interfere with the construction of the new B.B.C. station.

The station, by the way, is not expected to start transmission before the autumn of next year.

Empire Broadcasting: The Programmes

IT is to be hoped that the programme side of Empire broadcasting will justify the technical success of the venture. Judging from the comments of a New Zealand correspondent, I imagine that people in the Antipodes are by no means satisfied with what has already been issued to them.

"Too many talks and gramophone records are not wanted," writes the New Zealander. "Our stations have as good a selection of gramophone records as the B.B.C. Relays of special events will be welcome, and we should like to listen to speakers of distinction who otherwise could not be heard out here."

Royal Interest

This last wish should have been amply realised yesterday (Thursday) for the Prince of Wales (according to my information at the time of writing) arranged to go to Broadcasting House specially to broadcast to the Australian Zone the speech which His Royal Highness had made the evening before at the New Zealand Day Dinner at the Savoy Hotel.

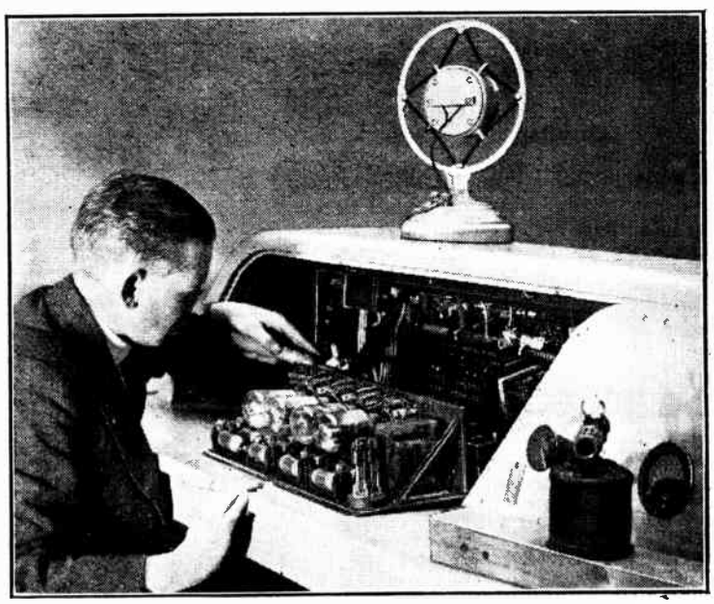
Unfortunately for Australia and New Zealand, broadcasts of such importance as this will be rare.

No More Mike Tests?

AFTER many experiments with condenser and other microphones, the B.B.C. engineers seem to have gone back to their early love, the Marconi-Reisz. Whereas two or three months ago the visitor to Broadcasting House never knew what sort of mike he would find in any particular studio, in the majority of cases the Reisz has been reinstated.

In the Reign of George III.

AN unusually promising programme of the "reminiscences" type is to be heard by National listeners on February 18. Mr. Leslie Baily, the producer, will go back one hundred and fifty years and give listeners a concert at Vauxhall Gardens, "Rosina, or Love in a Cottage," as played at the New Theatre Royal, Covent Garden, in the reign of George III, a discourse by Sir Horace Walpole from "To-night's Debate in the House," and a word from Dr. Samuel Johnson.



PREPARING FOR DRAMA. A B.B.C. engineer making adjustments at the rear of the Dramatic Control Panel at Broadcasting House. By the use of this panel a radio play producer can control the outputs of a dozen studios.

"Chu Chin Chow"

AN important dramatic broadcast is being arranged for April next. This will be "Chu Chin Chow," the wartime play which ran at His Majesty's Theatre, London, from 1916 right through to the end of the war.

"Chin"

Mention of "Chu Chin Chow" reminds me of a note received from a Japanese correspondent who tells me that a new censorship has been instituted because a well-known medical professor broadcasting from JOAK, Tokio, used the Japanese pronoun, "Chin," meaning "we," in an idiomatic form reserved exclusively for the Emperor.

The Chief of the Social Education Bureau happened to be listening.

Correspondence

The Editor does not hold himself responsible for the opinions of his correspondents

Correspondence should be addressed to the Editor, "The Wireless World," Dorset House, Tudor Street, E.C.4, and must be accompanied by the writer's name and address

What Does the Public Want?

IT is a pleasure to read the letter from "Diagnostic," to read the comments of someone courageous enough to stand up to that bogey called Selectivity. And "bogey" is the only word for it. I have in mind a well-known receiver, for which the chief selling appeal is selectivity, which will receive anything between 20 and 30 stations under fair conditions, and yet in the London area cannot separate London National from London Regional!

Twelve months ago, one manufacturer was courageous enough to spend hard money in trying to establish whether selectivity was justified, and although in these columns I cannot deal with the means used to establish the point the evidence was such as to determine the manufacturer to drop a high power "selective" set he had in mind and concentrate on a cheaper model "for the locals." But I can say this, that the sum total of the investigation proved that about 95 per cent. of several hundred listeners quite obviously did not listen to foreign stations. By "listening" I mean receiving a foreign station for a total time of half an hour a week.

Your correspondent finishes his letter with the sentence, ". . . perplexities of technical design are as nothing compared with the perplexities of estimating what the public wants." That is perfectly true, but just as research will solve the problem of technical design so, too, will research solve the problem of determining what the public want. The average manufacturer's guide is purely and simply the fashion of the moment. Half a dozen instances in support of this at once leap to mind, but as each in turn would probably start a controversy of the same nature as the present one, it is perhaps better to leave them unsaid.

ADVERTISING AGENT.

Gordon Square, W.C.1.

I HAVE read with interest the letter by "Diagnostic" in your correspondence space on the relative advantages of home and foreign listening, and would like to make the following observations in reply.

"Diagnostic" states that in his own experience, he has yet to meet a listener who consistently relies on foreign broadcasts for real entertainment. Speaking for myself, I rarely listen to anything else.

I make no claims to obtaining satisfactory results for any length of time from stations broadcasting between 200 and 450 metres, but there are several stations radiating above 450 metres, which I find can be thoroughly relied upon, both for quality of reception and good entertainment value.

I refer in particular to Beromünster, Langenberg, Prague, Munich and Budapest. Naturally I do not receive these stations with the same degree of clarity and strength as that of the West Regional transmitter, twelve miles away, but they are all considerably superior to the Northern, Midland, and London Regionals, which offer poor reception in South Wales.

Additionally, if intelligent use is made of the foreign programme section of *The Wireless World* it is almost always possible to obtain a pleasing programme from one or the other of the above stations, at any time after dusk, a godsend when one is more or less tied to the National programme for home amusement.

My receiver is no better than the average, being an all-electric set incorporating two screen grid stages, but I still maintain that good entertainment can be had regularly from abroad on the wave lengths mentioned, and when I change my set, selectivity and ability to obtain a fair range of programmes, will be my first consideration.

"EUROPEAN LISTENER."

Newport, Mon.

IT would be interesting to listeners here in South-west Cornwall if your correspondent "Diagnostic" would inform us which station is our local.

All the Regionals fade too badly for us to hear a satisfactory programme.

Poor old 5XX does its best, but it is not uncommon, especially during autumn and spring, for it to fade and distort so badly that we cannot even hear the News Bulletin from beginning to end.

We have always been dependent on the Continental stations for our entertainment, but since the arrival of the new high-power stations, which fade very little, listening is much more of a pleasure than it was formerly, and I would add that your weekly programme, with its full list of items, is a great boon.

We want all the sensitivity and all the selectivity that can be put into our sets, and the supplying of these by the makers is in the right direction.

Your correspondent is welcome to his local set; it would be of no use here.

Cornwall. GEO. EUSTACE,
Eng.-Lt.-Commander, R.N.
(retired).

MAY I through the medium of *The Wireless World* have the pleasure of making the acquaintance of your correspondent "Diagnostic," so that he may at least come across one person who makes a practice of listening continuously to foreign programmes?

Of course, the word continuously may be construed in many ways. If he means it in its dictionary sense of "without interruption" I plead not guilty and withdraw, but if he means one who, dissatisfied with the everlasting organ recitals, dance music, same old orchestras on the same days of each week as the B.B.C. puts out, turns to something fresh, then I am one of the men he wishes to know of.

Retired from business, with gardening and wireless as my two prime interests, I turn each morning, afternoon and evening to the Continent, taking only the news and talks in which I may be interested from London, finding many Continental stations whose programmes can be received equally as well as those of the B.B.C.

If, in receiving a programme, fading or morse sending intervenes, one can usually find a relay station free from interruption and so continue the listening.

So I say to the manufacturers, go ahead on the lines upon which you are working. Give us still better distant reception, for the number dissatisfied with the present programmes of the B.B.C. is growing every week. You are indeed catering for a real demand.

Middlesex. Wm. H. R. BRUCE.

I READ with interest the letter from "Diagnostic" in Jan. 27th issue of *The Wireless World*, and think that he must indeed have "struck an exceptional patch of the genus listener" to arrive at the conclusions expressed therein.

Take my own case. My main interest lies in opera, and if I had to depend on the B.B.C. for operatic relays I should fare very badly indeed.

The occasional act from an opera relayed by the B.B.C. is no good to anyone. It has no value to those uninterested and is very unsatisfying to opera-lovers, and in this respect "the B.B.C. programmes *are* inferior to foreign ones."

It may surprise "Diagnostic" to learn that this past week I have heard five operas from abroad, including a performance of "La Gioconda" with Gigli and Formichi in the cast—names which I think prove the point doubted by him, "that the somewhat lower standard of reliability and quality of reproduction is far outweighed by the brilliance of the foreign programmes."

As a matter of fact the opera mentioned was relayed by Rome and the reception was of a very high standard, and during the four hours' relay fading did not occur once, which I think shows that (2) "foreign programmes can be heard satisfactorily."

I personally know many people who spend several hours every week listening to foreigners, and I am looking forward to the time when I possess a set such as the A.C. Monodial when I shall have even more stations at my service.

Canonbury, N.1. J. C. SANSOM.

I THINK "Diagnostic" is about right. Manufacturers are continually worrying the public to buy something which the public does not want, but which the manufacturers think the public should have, and can be persuaded to buy. The more foreign stations held out as bait the more components does the listener require. Out-of-date sets must be scrapped and new ones bought to furnish the requisite selectivity.

Personally, I do not listen to foreigners, as I prefer quality to the nuisance of fading, atmospherics, and other interferences, and, anyhow, a record of "How Deep is the Ocean" is no better because it comes from abroad than it is when it comes from London—not so good, in fact.

When I visit my "foreign-listening" friends they usually run me round the foreigners, stopping about ten seconds at each one, to show what the set will do, but when they settle down to listen, I notice, it is the local station which is relied upon to provide the entertainment.

Correspondence—

Advertising will sell nearly anything, and if the manufacturers can make us buy they don't mind if our purchases become "white elephants." R. S. WALLIS.

Potters Bar, Middlesex.

THE mush, fading, etc., that usually come in with the remoter stations, are so annoying, when compared with the results that the local stations give, that even those who have powerful sets soon tire of "touring."

The fact that retailers stick to the B.B.C. and records proves that the interest in Continental reception is not general.

JOHN D. WINDLE.

Southall, Middlesex.

THE letter from your correspondent "Diagnostic" calls for a protest from one foreign listener. Personally, and I can also vouch for others, the bulk of my reception comes from abroad and from non-sponsored programmes. I have no experience of commercial receivers, but here is what the W.W. A.C. Monodial Super has done as regards reception in this district during the last eight months:—

(1) Quality.—Tested by the recent B.B.C. broadcast of pure musical notes gave perfect reproduction from 50 to 5,500 cycles, with a slight fall then to 6,000 cycles.

(2) Sensitivity and selectivity.—Gives for the whole evening, free from any background noise, mush, or heterodynes, reproduction equal to London from Rome, Milan, Heilsberg, Muhlacker, Leipzig, Beromunster, Langenburg, Trieste, Munich, Brussels I, Hilversum, Prague, and Brno. Dozens of others on which fading occasionally happens, but also here London National fades.

On this set one can listen for three to four hours at volume sufficient, if necessary, for a small hall to complete operas or orchestras. As everyone knows, the cast of the La Scala at Milan is the finest in Europe, and the A.C. Super enables one to listen to something which we can never get from the B.B.C., viz., a complete opera with the best artistes in Europe, the Berlin, Amsterdam, Stuttgart, Czech, and other Philharmonic Orchestras relayed and picked up direct, which is quite a different thing from hearing them in parts over hundreds of miles of even high-frequency cables.

A point not touched on by "Diagnostic," but in which I think the B.B.C. lags behind its foreign *confrères*, is this: A foreign station giving an international transmission gives the announcements in all the languages of the countries taking the transmission. Very seldom is this done by the B.B.C. when the Continent is taking our transmissions. It would be only courteous for us to do likewise.

Upminster. F. CHANDLER.

AS a fairly constant listener to foreign transmissions, I should like to make a few comments. I cannot speak for persons who buy 2 H.F. sets and do not use them, but I have a set and do, and I read a German radio paper. No doubt many potential listeners have not a separate room and set where they are able to indulge their fancy. Again, foreign interest is increased where one has travelled and understands a number of languages (the announcements, at any rate). Still, there is plenty to hear without speech. Just before reading "Diagnostic's" letter I had been listening to a lecture from Heilsberg on Hayden's musical clocks. Amusingly, the lecturer kept on playing records of which not a sound was audible, and then coming back to the "mike" and referring to them! As I am writing Warsaw has been playing Chopin's works, and has gone into a jolly interval signal. We do not listen to foreigns because they are "better" but because they are different. I never listen to B.B.C. plays, vaudeville, sport, rarely dance music, rarely debates, so I have plenty of spare time. I have just bought a record of the Comedian Harmonists played recently by Reykjavik, and am looking out for a peculiar "mocking" one played this week by Stockholm.

Certainly there is an exasperating amount of Morse interference and fading, but one just has to bear it as one of the ills. The continuous whistle nuisance can be lessened by moving the head slightly into a nodal or silent point. H. E. ADSHEAD.

Great Bardfield, Braintree.

I WAS most interested to read "Diagnostic's" letter under the heading of "What Does the Public Want?" in your issue of January 27th. While I do not pretend to speak for the ordinary wireless enthusiast, whether technical or otherwise, I certainly consider "Diagnostic's" comment on what is usually considered the most important function of a receiver, namely, the reception of foreign stations, is very definitely called for so far as musicians and technically educated music lovers are concerned. It is only within the last two or three years that we musicians have seriously considered the importance of radio as a means by which we can indulge in listening to, and studying, our art.

A CRITICAL MOMENT A scene in the Leipzig studio, where the lady announcer awaits the striking of the gong, which is actuated by a clock.

The trouble was that, up to that time, reproduction was so poor from a musical point of view that what was not actually lost in transmission was distorted to a degree that made it impossible for a musician to listen without being decidedly repulsed. However, now the story is very different, and the reproduction of the B.B.C. Symphony Concerts, chamber music, etc., *can* surpass even that of the gramophone, and thus we are able to listen to performances which *can* be a very excellent substitute for the real thing. I use the word "can," since good reproduction is the characteristic only of expensive instruments. On the other hand, to listen-in to foreign stations with the exception of perhaps one or two is still hardly worth the while of musicians, for, in the first place, apart from interferences, the reception is of a very definitely low standard, and, in the second, foreign programmes do not offer us, outside special occasions, programmes that are any better than those provided by the B.B.C.

It must be remembered that the musician will only turn to a foreign station (1) because he wants to hear some work, either new or old, that is rarely or never performed in this country; (2) he is anxious to hear one of the great foreign orchestras, such as the Berlin Philharmonic, to compare technically with our own orchestras, such as the B.B.C. and the London Philharmonic. It goes without saying, therefore, that, unless the reproduction is first-rate, he will only get a distorted and untrue idea of what he wants to listen to, with the result that he has merely wasted valuable time.

I know many musicians who have refused to purchase a wireless set as they are unable to find anything at a figure which they are able to afford and which at the same time will give a colourable imitation of the real thing.

In short, an instrument that will not reproduce a faithful representation is useless for *any* programme, from a musician's point of view. I know that it *can* be done. Therefore surely commercial sets could be manufactured to produce *real* music at a cheaper figure by the sacrifice of some of their distance-getting properties. I, as a musician, know that were this possible a very ready sale would ensue.

RALPH HILL, Editor.

The Musical Mirror and Fanfare.

SURELY your correspondent, "Diagnostic," overrates the difficulties of the set designer in his letter in the issue of January 27th? It is not really a question of listeners who want only local stations and quality, or another group who must have foreign stations all the time. The real standard for a set is, will it provide, at almost any time, a suitable alternative programme, British or Continental? If one wishes to hear opera and the B.B.C. is not providing it at that time, the loss of some quality matters little. The real demand is for the type of transmission one prefers, at the right moment.

The "distance fiend" can look after himself. *The Wireless World* has given him ample choice of circuits he can assemble, and I think he is usually independent of the set manufacturer.

Anyhow, the problem is no more difficult than that of the manufacturer of motor cars, yet he does not try to pin all his clients down to comfortable "tourers."

In conclusion, may I say how I appreciate the way your magazine has developed, still ahead with design but much easier to understand than it used to be.

I particularly like the lucid articles by Mr. Scroggie. Could he give us more information on the control of bass resonance in parallel-fed L.F. couplings, another article on accurate matching of set and speaker, and possibly some one to deal with the use of quiescent push-pull and small H.T. units? "INTERESTED."

Newcastle-on-Tyne.

Correspondence—

YOUR correspondent "Diagnostic" has spoken nothing but the truth, though he has probably put the cat among the pigeons so far as your readers are concerned. But then your readers are not typical of the great bulk of wireless listeners to whom everything "inside the box" is a sealed book. I do not number among my many friends more than one regular listener to foreign stations. The rest of us agree with "Diagnostic." On the odd occasions when the B.B.C. has an off night we usually switch off altogether. We simply cannot tolerate fading, atmospherics, interference of any kind or the ghastly hiss of the powerful de luxe receiver when reaching out. We do not even listen to Daventry because the quality is so poor, nor do we listen to a land-line programme if there is an equally attractive one from the local studio.

A high-class two-station receiver would only deprive us of Radio Paris on Sunday afternoons and during Test matches—probably it "never would be missed." I feel sure that if some enterprising manufacturer would put on the market a range of two-station receivers he would have an immediate success.

Manchester. "TWO-WAY SWITCH."

The B.B.C. Organ

AS the builders of the new B.B.C. organ, may we be allowed to comment on the remarks made in "Broadcast Brevities" in your issue dated January 27th?

We are anxious for your readers to know that the organ will contain absolutely nothing "which would make an ordinary (or extraordinary) organ enthusiast go queasy"! There will definitely be no "effects" such as drums, glockenspiel, and the like—nothing but pure organ tone of the best kind human hands can produce. This will be a large concert organ, capable of playing anything written for the organ or transcribed for it from orchestral scores.

We are not ashamed of our cinema organs—in fact, we are proud to have contribated largely to the popularity of this type of instrument by installing such a large number. The tremulant, the vox humana, the swell pedals, and all the special effects have their uses and can equally well be abused, like all good things. But the Broadcasting House concert hall is no place for a theatre organ, and any "performer who wishes to beat the cinema organ at its own game" on our organ there will have a bitter disappointment.

We are sure your readers will sympathise with us in trying to live down the huge success of our cinema organs in an attempt to maintain our reputation as builders of cathedral, church, and concert organs.

Willesden, N.W.10. J. I. TAYLOR,
Director, The John Compton Organ Co., Ltd.

Quiescent Push-pull

I WISH to congratulate you on bringing to light the valuable properties of quiescent push-pull, at a time when concentration on mains-drive tends to leave the battery user in neglect.

As announcements of manufacturers have described it as a "new principle," I would draw attention to the fact that a quiescent push-pull receiver of my design, with an output of 1,500 milliwatts and an initial anode current of 8 mA., was put on the market as the Burndept Universal Five (battery model) three years ago.

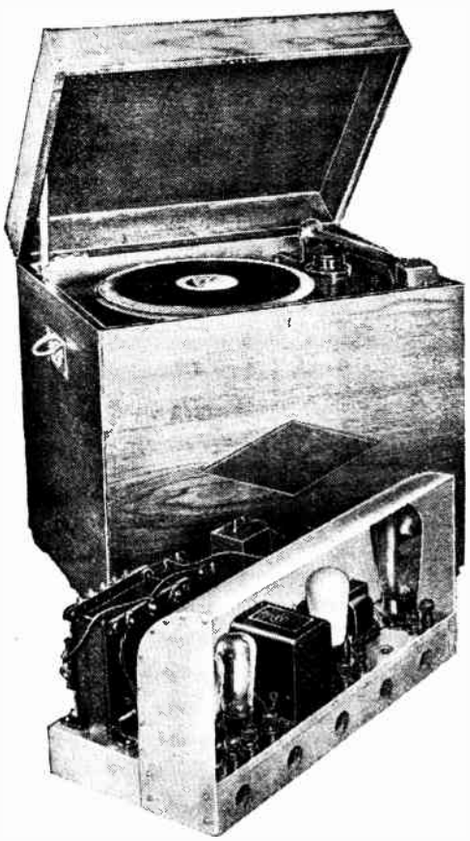
London, S.E.19. M. G. SCROGGIE.

In Next Week's Issue:—

The MODERN A.C. QUALITY AMPLIFIER

A Self-contained Gramophone Equipment with Electric Motor, Pick-up and Amplifier giving 5 to 6 watts Undistorted Output

FEW sounds are more distressing than those emanating from an overworked loud speaker or amplifier, yet the phenomenon is not a rare one. Too often an equipment entirely suitable for domestic use is pressed into service at a party or similar function and is expected to entertain some hundreds of people just as successfully as it would a few friends at the fireside.



The amplifier shown separate from the cabinet. The synchronous electric motor, pick-up and the two controls are attached to the motor board.

Undoubtedly there does exist to-day a large demand for an ambitious gramophone equipment capable of delivering up to 6 watts speech. This demand is fulfilled by the "Modern A.C. Quality Amplifier" which consists of two L.F. stages, the intervalve coupling being a transformer with variable tone control. To safeguard condensers and other equipment from high initial voltages a vacuum thermal delay switch is incorporated and each stage is thoroughly decoupled.

There is provision in the smoothing circuit for energising two loud speaker fields so that dual-compensated units can be used within any reasonable distance from the amplifier.

LIST OF PARTS REQUIRED

After the particular make of component used in the original model, suitable alternative products are given in some instances

1 Mains transformer, 400-0-400 v. **Savage type M.G.A.**
4 volts 3 amps. centre tapped; 4 volts 2 amps; 4 volts 1 amp., centre tapped.
(R.I., Sound Sales, Varley)

1 Output choke **Savage "Massicore" type L.34**
(R.I., Sound Sales, Varley)

1 L.F. choke, 28/14 henrys **R.I. type DY.11**
(Varley)

1 L.F. transformer, 4:1 **Multitone "Toco"**

1 Graded potentiometer for above **Multitone**

1 Combined potentiometer, 100,000 ohms and mains "on-off" switch **British Radiophone type 484**
(Bulgin, Claude Lyons, Rotorohm, Lewcos, Watmel, Wearite)

1 Power resistance, 3,000 ohms, 10 watts and holder **Varley C.P.39**

1 Resistance, 100 ohms, 1 watt **Claude Lyons**
1 Resistance, 500 ohms, 1 watt **Claude Lyons**
1 Resistance, 1,000 ohms, 1 watt **Claude Lyons**
1 Resistance, 5,000 ohms, 1 watt **Claude Lyons**
1 Resistance, 10,000 ohms, 1 watt **Claude Lyons**
1 Resistance, 50,000 ohms, 2 watts **Claude Lyons**
1 Resistance, 500 ohms, 3 watts **Claude Lyons**
(Dubilier, Eric)

1 Potentiometer, 30 ohms **Claude Lyons "Humdinger"**

4 Valve holders, 5-pin **Clix chassis mounting type**
(Bulgin, Eddystone, W.B.)

2 Fixed condensers, 1 mfd., 250 volts D.C. working **Dubilier type B.S.**

1 Fixed condenser, 2 mfds., 250 volts D.C. working **Dubilier type B.S.**

1 Fixed condenser, 4 mfds., 350 volts D.C. working **Dubilier type L.S.B.**
(Peak, T.C.C.)

3 Fixed condensers, 4 mfds., 500 volts D.C. working **T.C.C. type 95**

1 Fixed condenser, 0.1 mfd., 350 volts D.C. working **T.C.C. type 84**
(Dubilier, Peak)

1 Combined twin fuse holder and Mains Connector, complete with two 1-amp. fuses **Bulgin type F.15**

9 Ebonite shrouded terminals, Earth, 3 L.S.+, 3 L.S.—, 2 Pick-up **Belling-Lee type "B"**
(Burton, Clix, Eelex, Igranic)

1 Plymax baseboard, 18×9×⅜in. **Peto-Scott**

2 Battens, drilled, 18×1¾in. **Peto-Scott**
2 Battens, 8½×1¾in. **Peto-Scott**

1 Metal cowl **Peto-Scott**

1 Gramophone motor unit **B.T.H. "Truspeed"**

1 Pick-up **Marconiphone K17**

Cabinet, 19×15×14¾in. **Peto-Scott**

2 lengths Screened sleeving **Coltone**
(Harbros, Lewcos)

8 lengths Systoflex, flex, etc.

1 Vacuum thermal delay switch **Ediswan D.L.S.1**

Screws: 22 ⅜in. No. 4 R/hd.; 22 ¾in. No. 6 R/hd.; 8 ¾in. No. 6 R hd.; 6 ¾in. No. 4 R hd.; 2 ¾in. No. 6B.A.

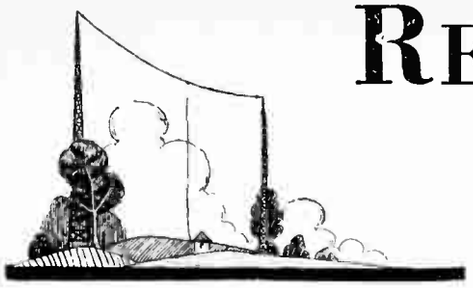
Valves: 1 Marconi or Osram MHL4 metallised, or Mazda AC HL. 1 Marconi or Osram PX25 or Mazda PP5/400. 1 Marconi or Osram U.14 or Mazda U.120/500.

BLUE PRINTS

As mentioned elsewhere in this issue, blue prints for "The Wireless World" All-Wave Monodial Super (Battery) are obtainable, price 1s. 6d. post free. In addition, blue prints are available for the following:—

Autotone. (February 24th, March 2nd and 9th, 1932.)
Monodial A.C. Super. (Booklet, price 1s. 8d. post free.)
Modern Straight Five. (June 22nd and 29th, 1932.)
Baby Superhet, A.C. (August 19th and September 2nd, 1932.)
Baby Superhet, Battery. (October 7th, 1932.)
Short Wave Two. (November 4th and December 23rd, 1932.)
Monodial D.C. Super. (December 2nd and 9th, 1932.)
Straight Three. (December 16th, 1932.)
Modern O.C. Three. (December 30th, 1932, and January 6th, 1933.)

These can be obtained, price 1s. 6d., from the Publishers, Iliffe & Sons, Ltd., Dorset House, Tudor Street, London, E.C.4.



READERS' PROBLEMS

THESE columns are reserved for the publication of matter of general interest arising out of problems submitted by our readers.
Readers requiring an individual reply to their technical questions by post are referred to "The Wireless World" Information Bureau, of which brief particulars, with the fee charged, are to be found at the foot of this page.

A Universal Station Finder

WE are asked to say whether *The Wireless World* Station Finder could be modified to give identification both by the absorption principle (as in the original instrument) and also by the addition of a buzzer, as a radiating wavemeter. Our querist has made up the device as described, and now wishes to extend its usefulness by converting it into a generator of signals of known wavelength as an aid to fault-finding, ganging, and general receiver adjustments.

This is quite a practical plan, and the cost of having a buzzer—which will only amount to a few shillings—is well justified if the Station Finder is required to do anything more than perform the functions for which it was originally designed. Full information regarding the addition of a buzzer was given last week, but in order that the instrument may be made to serve either as an absorption or a radiating meter

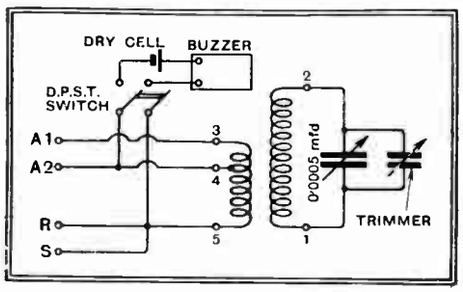


Fig. 1.—Indication by absorption or radiation at will : a de luxe version of the station finder.

at will, we suggest that it should be wired as shown in Fig. 1. With the double-pole single-throw switch in the "open" position, the meter may be connected in the aerial circuit in the usual manner. By closing the switch the buzzer is put into operation, but before doing this the instrument should be entirely disconnected from the receiver.

When the instrument is used as an aid to making critical adjustments, it is worth while taking a little extra trouble in adjusting the buzzer, so that the amplitude of the oscillations which it produces in the tuned circuit may remain sensibly constant.

Potentiometer Resistance Values

WHEN a potentiometer is used to control the grid voltage of a battery-fed variable-mu H.F. valve, it is normally connected across the grid bias battery, and so will draw current from it. The actual value of the potentiometer is seldom a matter of any great importance, the main requirement being that its ohmic resistance will be sufficiently high to prevent an undue wastage of current.

A potentiometer of about 25,000 ohms is very often specified. This happens to be a standard value obtainable almost everywhere, and is perhaps rather more dependable than a component of higher resistance. Connected across a 9-volt battery, for example, the current consumed by a potentiometer of this resistance will amount to only about a third of a milliampere, and so the life of the battery will not be greatly less than if it were working under "no load" conditions. Of course, measures are always taken to interrupt the battery circuit when the set is out of use.

To those correspondents who have written to us on the subject, we would say that when it suits them to do so, there is little reason why they should not use potentiometers of, say, half or twice the value specified. But if there happens to be a bias-limiting resistance in series with the potentiometer, the value of this resistance should be increased or reduced proportionally. For instance, if a 25,000-ohm potentiometer is recommended in a certain design, together with a limiting resistance of 2,000 ohms, a change in potentiometer resistance to 50,000 ohms would imply the use of a "limiter" of 4,000 ohms. The nearest standard value of 5,000 ohms would be satisfactory.

25-cycle A.C. Mains

WE have recently received several requests for advice on the subject of operating recently described *Wireless World* receivers on 25-cycle A.C. mains.

The position may be briefly summed up by saying that almost any A.C. set may be made to work satisfactorily with a supply system of that low periodicity, but, of course, a specially designed power transformer must always be used. Incidentally, the transformer is bound to be larger than one intended for standard 50-cycle supplies, and so slight modifications in the original layout may become necessary. It may also be necessary to change the relative positions of the power transformer and L.F. transformer in order to minimise hum.

There is also the question of smoothing. Theoretically, a considerably more generous smoothing system will be required, but in practice the ordinary smoothing circuit may be quite effective; this is because both the loud speaker and the human ear are less sensitive to the lower hum frequencies of the 25-cycle supply. It is therefore recommended that additional smoothing condensers—and possibly an extra choke—should not be added until they are found to be necessary.

Measuring "Free" Bias

WITH an ordinary voltmeter it is practically impossible to make an accurate measurement of the voltage applied from an automatic grid-bias system. The degree of error depends on such factors as the resistance of the meter and the value of the bias resistor.

With a valve voltmeter it is possible to make a direct and accurate measurement, but very few amateurs have access to this piece of apparatus. As a rule, one must be satisfied with an indirect estimation of voltage, which is obtained by measuring the current flowing through the bias resistor and then calculating the voltage that will be developed across it.

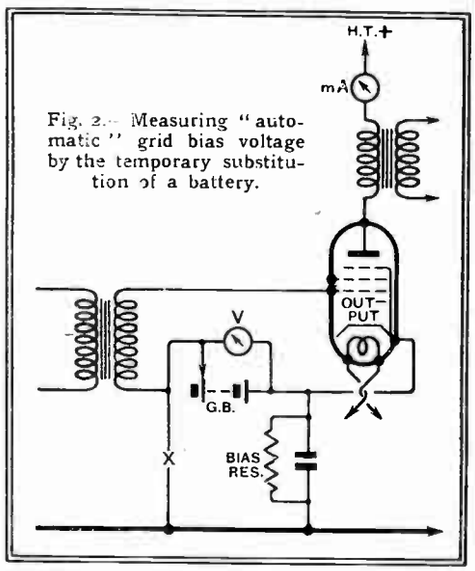


Fig. 2.—Measuring "automatic" grid bias voltage by the temporary substitution of a battery.

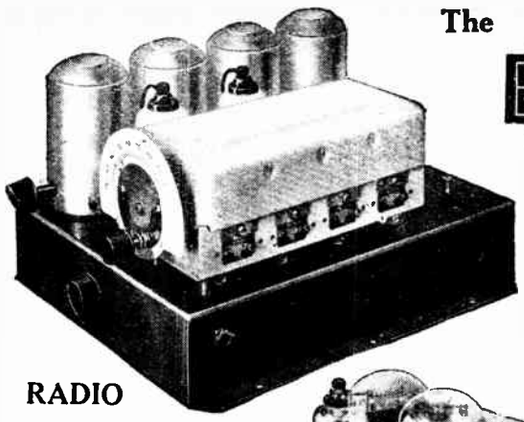
In the absence of special appliances, a measurement of bias voltage can only be made by a method of substitution, and this is the plan that we recommend to a reader, who has a multi-range milliammeter and a voltmeter. Briefly, what we recommend him to do is to insert the milliammeter in series with the anode of the valve (in this case the output valve) and to substitute temporarily a bias battery for the original automatic system. The voltage of this battery will then be varied until the same anode current flows as under normal automatic bias conditions. The voltage of the bias battery, as measured by a good voltmeter, will then be equal to that originally applied.

Connections will be as shown in Fig. 2; the original grid return lead must be interrupted at the point X, and the positive side of the bias battery must be joined directly to the cathode of the valve.

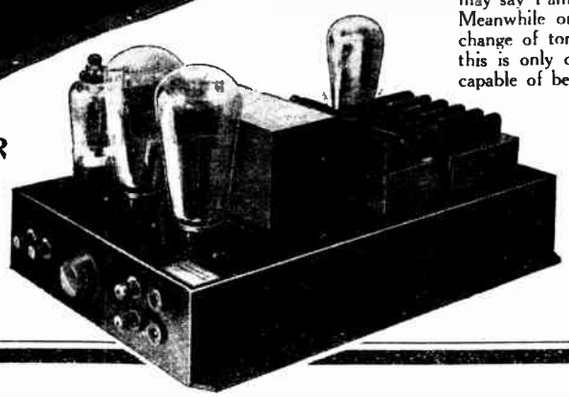
The Wireless World
INFORMATION BUREAU

THE service is intended primarily for readers meeting with difficulties in the construction, adjustment, operation, or maintenance of wireless receivers described in *The Wireless World*, or those of commercial design which from time to time are reviewed in the pages of *The Wireless World*. Every endeavour will be made to deal with queries on all wireless matters, provided that they are of such a nature that they can be dealt with satisfactorily in a letter.

Communications should be addressed to *The Wireless World* Information Bureau, Dorset House, Tudor Street, E.C.4, and must be accompanied by a remittance of 5s. to cover the cost of the service. The enquirer's name and address should be written in block letters at the top of all communications.



RADIO



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The B.S.R. Radio Chassis and Power Amplifier together provide radio reception and reproduction of the highest order, permitting British and continental stations to be tuned in without interference, and providing a quality and volume that is not surpassed by any commercial receiver, irrespective of price.

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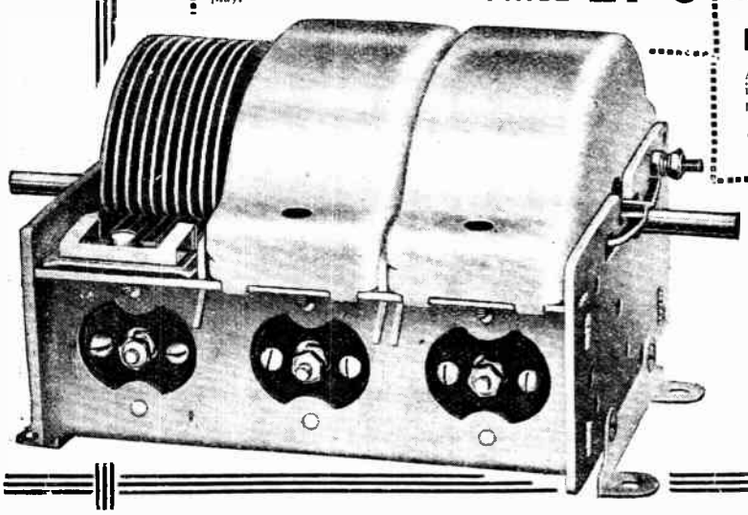

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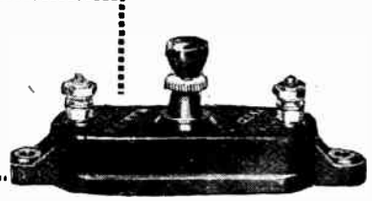

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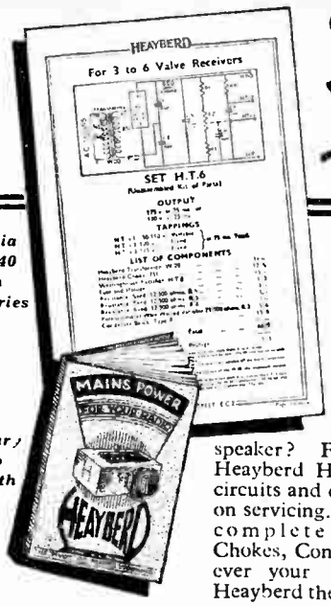

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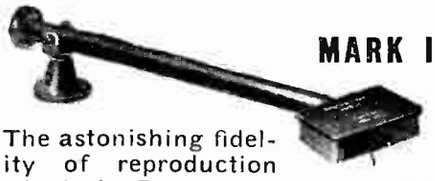

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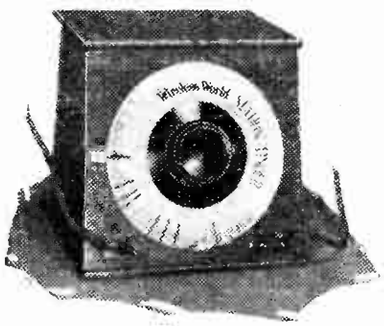
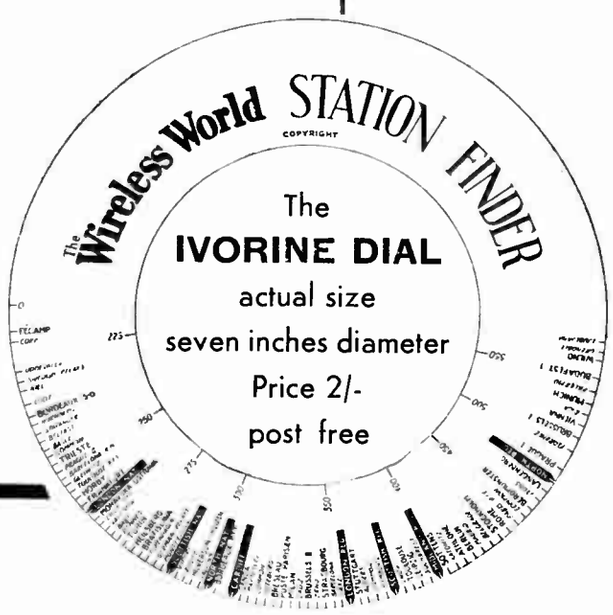


The Complete Station Finder showing the Ivorine Dial.

Are you building "The Wireless World" Station Finder?

This handy accessory, which positively identifies Stations, was described for constructors in "The Wireless World" of January 13th.

FOR the benefit of constructors wishing to add to the efficiency, the appearance, and the durability of the "Station Finder," an attractive Ivorine Dial (shown in a reduced size in the illustration on the right) has been manufactured for the Proprietors of "The Wireless World." This Dial is obtainable direct from the Publishers of "The Wireless World," Dorset House, Tudor Street, London, E.C.4.



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"WIRELESS World" Single Dial Superhet, battery, complete Radiophone condenser, P.220A; £6.—11, Treesdale Rd., Harrogate. [1755

OSTARGANZ Combined A.C. and D.C. Receiver, in modern walnut cabinet, with Rola M.C. loud-speaker, unboxed, list price £12/12, our price, 2 valves £5; 3 valves £6 10; c.o.d., carriage paid; state voltage. Kay, 167, City Rd., Finsbury, E.C.1. [1632

BARGAINS.—Marconi model 66 portable, new, guaranteed, £8/10; 1933 Clarion 5 A.C., 2 Multi-Mu, S.G., detector, Pentode, rectifier, M.C. speaker, tone control, beam station selector 200-2,000 metres, connections for pick-up, extra speaker, mains aerial, 2½ watts output, new, £13/10; 1933 3-valve A.C. 100-250, S.G., det., Pen., M.C. speaker, mains aerial, gramophone connections, walnut cabinet, £9/17 6, equal 16-guinea set.—Write particulars, Sanders, 12, Eastbourne Rd., Chiswick, W.4. [1782

AUTOTONE, new, author's specification, with valves and cabinet; nearest £6. Smethurst, Wootton, Ulceby, Lincs. [1774

HAYNES Quality Radiogram, company built, Magnavox dual speakers, walnut cabinet; £29. 38, Thackeray St., Battersea, S.W.8. [1758

OSRAM Four, including A.C. 240-volt rectifier, also Blue Spot speaker 66R; £7.- 107, Sudbury Heights Av., Greenford. [1771

CLEARANCE of 1932 Shop Soiled Receivers, brand new; 4 only, Ekco model 313, A.C., £6 each; 2 only, Ekco model 312, A.C., £3; 3 only, Marconi model 42, A.C., £8; one only, Amplion 6, A.C., £10; one only, Philips model 2636, D.C., £10; 2 only, Columbia portables, model 305, £7/10; one only, Philips 930A, A.C., £6.—Gardiners' Radio, West Southbourne, Bournemouth. [1761

1933 Kilodyne Four, new, complete valves; £6.—Stokes, 44, Ridgdale St., E.3. [1763

H.M.V. Radiogram Model 521a.c., perfect condition; 24 guineas. Box 6023, c/o *The Wireless World*. [1814

MARCONIPHONE Model 42 Receiver, A.C., used few weeks only as new, owner leaving district; £12.—Wilkinson, 43, Washington St., Workington. [1795

5-VALVE Portable Marconi, valves, batteries; cost £18/18 last year, wonderful tone; £3 17/6.

4-VALVE Screen Grid Portable, Mullard valves, Exide batteries, 1933 model, leather case; cost £14/14, £3/18/6.

CELESTION Manufacturers' C24 Chassis, wonderful tone, handles terrific volume; cost £12 12, 15/-.

PERMANENT Magnet Moving Coil, in beautiful mahogany case, 3 ratio output transformer, 1933 model; cost £6/6, £2/5.—"Wireless," 40, Wood Vale, London, N.10. [1802

BRAND New £16/16 Lotus 3-valve A.C. Receiver; £12/12; owner now on D.C. Box 6018, *The Wireless World*. [1811

7-VALVE Short Wave Superhet., 16-58 metres, Kilomag Four, both with valves; what offers?—Lindsay, Lochfoot, Dumfries. [1804

COLUMBIA Radio-Gram., model 302, cost 80 guineas, A.C. 200-250, perfect condition; £30.—J. C., 11, Garrick Close, Walton-on-Thames. [1805

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These sets may be obtained if required for a first payment of 12½%

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A.C. Charging Boards (bankrupt stock), output 40v. 6a., valve rectification; cost £25, £8 5. Jersey, Cumnor Hill, Oxford [1715

CHARGING Plant, in perfect order; £10, view.—16, Grant Rd., Addiscombe, Croydon. [1749

BARGAIN.—240v. Adeco eliminator and charger, 180v. 40 m/a., two variables, 1.3 amps. L.T., cost 10 guineas, price £3 3s. 3 guineas.—Phillips, 19, Hadley Rd., Enfield. [1753

REGENTONE A.C. Eliminator, 2 variable, 1 fixed, 1 power, 180-220 volts, 60 or 100 milliamps, 4 volts 4 amps., month old; cost £10, £5/10, or near offer.—Burt, Cornswood, Billacombe, Plymouth. [1766

SERADEX All-British Radio Saves You Money.

D.C. Gramo-amplifier, uses the following: 1 R.B.2 mains resistance, 3/6; 5 type B 1 mfd., 1/6 each; 3 type B 2 mfd., 2/3 each; 1 type B 4 mfd., 4/5; 2 M150 100 ohms resistors, 2 ditto 250 ohms, 1 ditto 1,000, 1 ditto 5,000, 1 ditto 50,000, 1 ditto 100,000, 8d. each (if wire-wound are preferred, use type G125); 2 type C.A. chokes, 12/5 each; price for complete kit, carriage paid, £2/10.

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SERADEX M.R.1510, Westinghouse rectified, output 15 volts, 1 amp., complete in case, with variable output, clear scale meter incorporated; £3/12/6.

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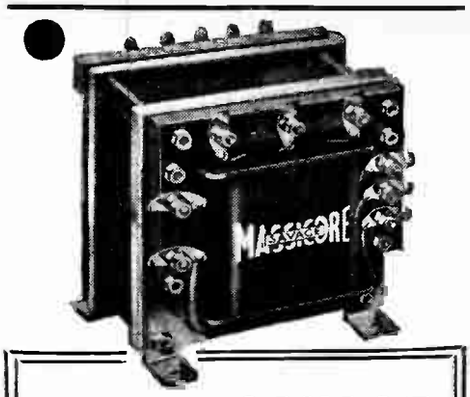

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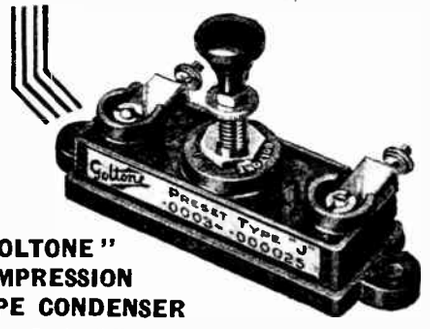
"GOLTONE" SUPER H.F. CHOKE.

Praised by the "Wireless World" (See page 142, Aug. 5th Issue.)

Recommended for the "W.W." ALL-WAVE MONODIAL BATTERY RECEIVER," (Ch.1). For S.G. and Super Het. Circuits Covering Wavelengths from 10 to 2750 meters. Inductance 350,000 microhenries. D.C. Resistance 225 ohms. Self-capacity 5 MMFD. R3/46. Price **4/6** each.

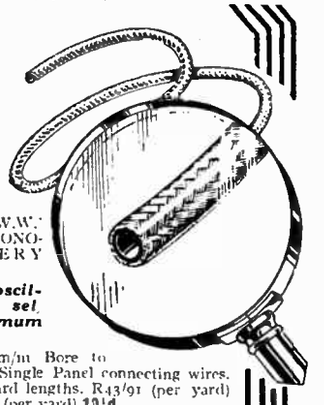
SCREENED H.F. CHOKE (Ch.2). Price **4/-** each.



"GOLTONE" COMPRESSION TYPE CONDENSER

Panel or Baseboard Mounting. AS SPECIFIED FOR THE "W.W." ALL-WAVE MONODIAL BATTERY RECEIVER" A unique feature is that this Condenser can be mounted on the panel and adjusted from outside the set as with the ordinary controls. **Type "H"** (C4 in Set) **1/3**

"GOLTONE" AIR-SPACED FLEXIBLE METALLIC SCREENED TUBING.



As used in the "W.W." ALL-WAVE MONODIAL BATTERY RECEIVER."

Prevents self-oscillation. Low self capacity. Minimum dielectric loss.

Size of Tubing 2m/m Bore to take all Standard Single Panel connecting wires. Supplied in one yard lengths. R43/91 (per yard) **9d.** R43/92 3m/m (per yard) **10½d.**

FREE
1933 48 PAGE FULLY ILLUSTRATED RADIO CATALOGUE NOW ISSUED.
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Elementary Principles of Wireless Telegraphy and Telephony. (Third Edition.) By post, 8/-.

A set is as good as its components

When you incorporate a BURTON TRANSFORMER in your set you are using a component of the highest efficiency, which will reveal itself in the tonal purity and volume of your set.

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Wound in ratios of 3-1 and 5-1.

PRICE **5/9**

Made by

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BUILD A BETTER SET WITH

BURTON COMPONENTS

EPOCH

MOVING COIL SPEAKERS

The Finest in The World in Each of Their Price-classes.

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At the junction of Rosebery Avenue and Farringdon Road.
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CRESSALL RESISTANCES

"Cressall" Asbestos-Wire Woven Resistance Nets for voltage absorbing on D.C. Mains. Receivers. Mica-Wound Resistance Units. Sliding Resistances. Resistance Wires.

Please write for Lists.

CRESSALL MANUFACTURING COMPANY, 31-32, TOWER STREET, BIRMINGHAM.

GRIPSO
PATENT PUSH-ON EARTHING CLIP
TO FIT ¼" PIPE
4D EACH
THE GRIPSO COY.
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"QUIESCENT" CIRCUIT METER

Exclusively Specified for "W.W." "QUIESCENT" P.P.

Type E.66. 10 M/A Scale, 10/-

Flush fitting, black moulded case. Immediate delivery. From all dealers—if any difficulty, send P.O. for 10/- to:

SIFAM E.I. Co. Ltd., YORK WORKS, BROWNING ST., S.E.17

Components, etc., for Sale.—Contd.

BIRMINGHAM RADIO MART'S Weekly Selection Manufacturers' Surplus Stocks; new unless otherwise stated.

RESISTANCES, Erie, H.M.V., etc.; our selection, 5,000 to 100,000 ohms, 3/- dozen; Dubilier and T.C.C. mica condensers, 3/- dozen; H.M.V. hum stoppers, C.T., 9d.; anode oscillation stoppers, 3d.

METERS.—British flush 2½in. nickel, any range above 20 m/a, 5/9; few Sifam M.C., 15/-; 2 ma., 17/6.

COLUMBIA 2-valve Chassis, complete, disc, dials, knobs, etc.; 15/-; no valves.

CONDENSERS.—T.C.C. 1,700v. working, brand new, 4+4 mfd., with heavy stand-off insulators; 25/-; large stocks of Hydra and T.C.C.

GOLTONE Cosmic Coils, comprising one dual range coil and one short wave ditto on air-spaced formers; the pair 2/6.

MARCONI M.C. Output Transformer, 13 to 1, can be tapped for universal from 54 to 4½ to 1; cost price 5/-.

2-GANG 0.0005 Decast Frame Trin. Spindle Trimmers, worth 17/6, finest quality, made; largest firm in industry, 6/6.

NEW Boxed Lewcos Short Wave 6-pin Coils, 20-45 and 40-90 metres; 1/6, or 3/- pair, post free.

PLEASE Note, Radio Mart's oldbeast sale commences February 6th; hundreds of snips for callers.—19, John Bright St., Birmingham. [1791

ATLAS Tapped Output Choke, shrouded, 10/-; Ferranti 4 mfd. condensers, 500v., V.A.C. test, 3/9.

HEAYBERD H.T. Eliminator, type C120, 35/-; Ferranti mains transformer for Westinghouse H.T.1, 17/6; O.P.M.6, 13/3; A.F.3, 12/6; A.F.6, 15/-; O.P.30, 12/3; B3 choke, 6/9.

SONOCHORDE Standard P.M. Speaker, List 32/6, unused, £1.

J.B. Unitune 2-gang Condenser, with disc drive, fully screened; 10/6; unused.

WESTINGHOUSE Metal Rectifier, 300v. at 60 m/a, 13/6; 350v. at 65 m/a., 15/-.

ALL Above Goods are Guaranteed Perfect; send on 7 days' approval against cash or cheque; we will allow 50% off the list price on your surplus radio gear in part exchange for new.—W. B. Mackie, 61, Dartmouth Rd., Forest Hill, S.E.23. 'Phone: Syd. 6741. [1784

WANTED for Cash, highest prices paid, up to one-third of list price, for:

MODERN High Grade P.M. and Energised M. Coil Units and Balanced Pairs, etc., Ferranti and Western M.C. meters in useful ranges.

HIGH Grade L.F. and P.P. Input and Output Transformers, Ferranti, Varley, etc., high grade electric gramophone motors and pick-ups and arms.

ALL Types of Standard A.C. Mains, rectifiers, and 2-volt battery valves, if late type and full emission.

LATE Model Westinghouse Rectifiers, high grade mains transformers for same, or high voltage mains transformers for 4v. rectifying valves, high grade L.F. chokes, Ferranti, Varley, etc., and electrolytic or fully screened gangod condensers.

GOODS Bought for Cash from Callers; only goods of types enumerated considered; parcels by post or carrier by arrangement; enquiries 1½d. stamp please!

APPLEBY'S, Buying Office, 46, Bloomsbury St., New Oxford St., London, W.C.1. Museum 8195. [1738

EXPERIMENTER'S Guaranteed Components. Ferranti H.F. kit, 10/-; anode feed unit, with resistances, 5/-; C.1 condensers, 2/6; B.1 chokes, 13/6; O.P.9C, 16/-; O.P.M.1C, 16/6; A.F.1C, 17/-; A.F.10, 3/-; S.V.4 unused mains, 13/-; safety box, 12/6; Marconi Universal transformer, 3/6; Ideal choke, 10/-; pick-up, 35/-; T.C.C. 1 mfds., 1/6; 3 mfds., 6/-; 6 mfds., 8/6; Mansbridge, 0.25, 1/-; R.I. 25,000 ohm potentiometer, 3/-; Bero 400 ohm potentiometer, 1/6; Fader double potentiometer, 5/3; Climax H.F. chokes, 1/6; Pye differential condensers, 1/6; Chassimount 3-gang, 10/-; Ormond dial, 1/6; A.C./H.L., 7/-; A.C. Ps, 7/6; A.C. S.G., 9/6; B.T.H. Universal £5/5 gramophone motor, 55/-; Brown mahogany sprung, £2.—Harvey, Queen St., West Bromwich. [1909

WEST END RADIO STORES.—Genuine liquidation stock for disposal; a few special bargains.

T.C.C. Electrolytic Condensers, 2,000+2,000 mfd., 12v. peak, 4/9; T.C.C. wet electrolytic condensers, 8 mfd., 450v. working, 6/6; ditto, 4 mfd., 5/-; T.C.C., 1 mfd., 500v. test, 1/6; T.C.C., 6.5 mfd., 500v., tapped, 5/6; T.C.C., 0.01 9d., 0.25, 1/-.

CHASSIS, wired, complete, 2-valve A.C., S.G., 37/6; 3-valve A.C., £3; 2-valve D.C., 28/6.

SETS, Brook Radio 2-valve D.C., £5; 2-valve A.C., £5/10; 3-valve A.C., S.G., £7/10; all with pentode output and moving coil speakers, complete.

HEAYBERD Mains Transformers, 250-0-250v., 4v. 2a., 4v. 2a., 10/-, list 35/-; Wearite ditto, same output, 15/6.

EKCO Pick-ups, complete with volume control, etc., 14/6; heads only, 5/6; Dux L.F. transformers, 3/11; Dux L.F. chokes, 4/11.

PYE L.F. Chokes, 32 and 20 henries, 4/-; twin-gang Utility condensers, 0.0005, screened, 12/6; S.M.

IGRANIC Rotary Changeover 2-way Switches, 1/9, 3-way 1/9, 4-way 2/-; Lewcos wire-wound volume controls, 10,000 and 50,000 ohms, 2/3.

ERIE 1-watt Resistors, all sizes, 8d.; Polar 0.0005, disc drive, 0.0005, S.M., 3/11; Polar twin-gang 0.0005 S.M. drive screened condensers, 9/6.

SONOCHORDE M.C. Speakers, 2,500 ohm, and 6,500 ohm, 18/6; N. and K. Farrand inductor speakers, 35/-.

D.C. Mains Resistances for 5 valves, 200-250v. input, 4/6. 5-pin sub-baseboard valve holders, 4d.; Bulgin anti-toggle switches, 1/2.

LOTUS 0.0005 Slow Motion Condensers, 3/6; Lotus 5-pin valve holders, 6d.; Utility 0.0005 drum S.M. condensers, 3/6.

COLLARO A.C. Induction Gramophone Motors, £3 model, with automatic stop; 37/6, boxed.

ALL Goods Guaranteed as New; see our windows for hundreds of bargains in set, speaker and radiogram cabinets, A.C. and D.C. valves, moving coil speakers, and every component you may require, at real knock-out prices.

WEST END RADIO STORES, 14, Lisle St., Leicester Sq., W.C.2 (Gerrard 7341); and at 382, Coldharbour Lane, S.W.8. Postage extra on all orders. [1900

FUSES and FUSE-HOLDERS

An exceptionally neat and compact Fuse-holder to take 1¼in. fuses. Heavy gauge phosphor bronze clips, soldering tags and terminals. Complete with 1 amp. fuse.

No. 1034

Price **9d.** each

Spare Fuses, all ratings and sizes, 6d. each.

Write for complete list.

BELLING-LEE
FOR EVERY RADIO CONNECTION

Advert. of Belling & Lee Ltd., Cambridge Arterial Rd., Enfield, Midx.

Quiescent Push Pull with H.F. stages!!

de Luxe Table Model, Band Pass, 1 H.F. and 5 gns. Speaker - - - - **21** Gns.

Super Het Types to order.

F. E. GODFREY (Radio) LTD. MUS. 8134.
63-5-7, Chenies Mews, Francis St., W.C.1.

PARIMA SELENIUM CELLS

FOR ALL PURPOSES.

Parima Light-Sensitive Resistances are constant mechanically strong, moisture proof and exceedingly sensitive. Fully guaranteed for 12 months.

Prices from **5/-**

PARIMA MANUFACTURING CO.,
21, BROMLEY ROAD, S.E.6. *Hither Green 3629.*

RYALLS RADIO,
33, CHANCERY LANE, LONDON, W.C.2,

accept used radio parts, or sets, in part or full payment for brand new, at list prices. Only good quality components accepted, accumulators and very small items cannot be taken. Goods bought for cash from callers, up to one third of list price paid, parcels by post by arrangement only.

NOTICE TO TRADERS

EVERY PART FOR EVERY CIRCUIT — LEONARD HEYS — BLACKPOOL

Your Quiescent Push-Pull, Monodial, Station Finder, S.T.400, New Century Super, Melody Ranger *and all other radio Requirements can be obtained* QUICKLY *from*

LEONARD HEYS WHOLESALE ONLY

Write for details of our Trade Service including trade card.

Faraday House, Henry St., Blackpool, Lancs.

Hear PERFECT radio through a PERMAG REPRODUCER

CHASSIS ONLY **38/6**
CABINET MODEL **49/6**

Ask your dealer or write to:

BAKER'S SELHURST RADIO
75 & 77, Sussex Road, Croydon.
'Phone: Croydon 3411/2.

FOR VOLUME & TONE IGRANIC ALONE

Components, etc., for Sale.—Contd.

PREMIER SUPPLY STORES Offer the Following Brand New Goods at a Fraction of the Original Price; all goods guaranteed perfect; carriage paid over 5/-, under 5 - postage 6d extra. (Ireland carriage forward.)

PREMIER.—Mains transformers, all guaranteed, terminal connections, 200/250 input 40/100 cycles, output 135 volts at 80 m.a. for voltage doubling, 8/6; 4 volts 4 amps, C.T. low tension, 2/- extra; Westinghouse rectifier for above, 8/6.

MAINS Transformers, primary 200/240 volts, secondary 350-0-350 volts at 90 milliamps., 4 volts at 3 amps. (C.T.), 4 volts at 2 amps (C.T.), 12/6.

AMPLION Transformers, input 100-250 volts, output 350+350 volts, 120 milliamps., 4 volts at 5 amps., 4 volts at 2 amps., 6 volts at 1 amp., all centre tapped; 17/6.

MAINS Transformers, 12 volts 1 amp., 7/6; 9 volts 1 amp., 7/6; 4 volts 4 amps. and 4 volts 2 amps., 8/6; 14 volts 4 amps., 12/6; 4 volts 3 amps., 7/6; 4 volts 5 amps., 8/6; 6 volts 2 amps., 7/6; 7½ volts 2½ amps., 7/6; 10 volts 3 amps., 10/-.

H.T.9 Transformer, 230 volts 200 milliamps., with 4 volts 4 amps. (C.T.) winding; 17/6 (with screened primary).

H.T.8 Transformer, 10/-; with 4 volts 3.5 amps. low tension C.T., 15/-; complete with Westinghouse H.T.8 rectifier and L.T. winding, 27/6 (with screened primary).

MAINS Transformers, output 250-0-250 volts at 60 milliamps., 4 volts at 1 amp., 4 volts at 2 amps., 4 volts 3-4 amps., all centre tapped; 15/- (with screened primary).

MULTIRATIO Output Transformers, 15 different ratios; 7/6.

PREMIER Chokes 40 milliamps, 25 henries, 4/-; 65 milliamps, 50 henries, 6/-; 150 milliamps 30 henries, 10/6; Pentode output chokes, tapped, 7/6.

PYE Chokes 110 henries, 4/-; 20 and 32 henries, 4/6.

SMOOTHING Chokes for Series Connected Filaments from D.C mains, carry 1 amp.; 7/6.

KOLSTER-BRANDES 80 milliamp. 30-henry Chokes, tapped, 1/3 and 2/3, 7/6.

T.C.C. Condenser, 2 mfd. 750 volts working, 4/-; 4 mfd. 750 volts working, 6/-; 4 mfd. 400 volts working, 4/-; 4 mfd. Electrolytic, 440 volts working, 4/-; 8 mfd., 4/6.

T.C.C. Block Condensers, 250 volts working, 8+2+2+1+1 mfd., 5/6; 375 volts working, 1+1+0.1+0.1+0.1+0.1+0.1+0.1 mfd., 2/-; 375 volts working, 6+3+2+2+2 mfd., 10/-; 250 volts working, 2+2+2+2+1 mfd., 5/6.

WESTERN ELECTRIC, 0.01+0.01 mfd., 400 volts working, 1/-; blocks 4+2+2+2+1+0.09 mfd., 400 volts working, 6/-; 10 mfd., 400 volts working, 5/-.

FERRANTI Condenser Blocks, 300 volts working, 4+4+2+2 mfd., 10/-; T.C.C. 0.1 mfd. non-inductive condensers, 9d.

VARIABLE Condensers, Polar, 3-gang cut-type, fully screened split end vanes and disc drive, 0.0005, 12/6.

ORMOND All-brass 2-gang Condensers, semi shielded, 0.0005, 5/-; Ormond all-brass 0.0005 slow-motion condensers, with knob and dial, 3/6; Polar 0.0005 and 0.00035 Bakelite Dielectric condensers, with knob, 1/-.

PREMIER Eliminators, input 200/250 A.C., 40/100 cycles, output 250 volts at 60 milliamps., 80 volt and 120-volt taps, incorporating Westinghouse rectifier, 42/6; with 4 volts 4 amps., L.T., 7/6 extra.

PREMIER Eliminators, input 200/250 A.C. Output 80, 100, and 120 volts at 20 milliamps., incorporating Westinghouse rectifier, 27/6; with L.T. charger incorporated, 35/-.

D.C. Eliminators, output 60, 90 and 120 volts, at 120 milliamps, 15/-; larger model, output 80, 120 and 200 volts at 50 milliamps, 25/-.

ACCUMULATOR Chargers for A.C. Mains, input 100-250 volts, 1-2 amp., 17/6; 1 amp., 22/6.

PREMIER Eliminators, input 200/250 A.C., output 150 volts at 30 milliamps, 2 lower taps, incorporating Westinghouse rectifier, 37/6, with 4 volt 3-4 amp. L.T.

AMPLION Moving Coil Speakers, type E.M. 644, dual fields, 2,500 and 5,000 ohms (100 or 200 volts), with multi-ratio output transformers; 15/-.

B.T.H., R.K. Minor, moving coil speaker, 2,500 ohm field; 15/-, with multi ratio transformer.

K.B. Auditorium Speaker, 6 volt model, 25/-; A.C. model £2, with output transformers

S. G. BROWN Permanent Magnet Speakers, giant model, 12in. cone, high resistance speech coil; listed £8, our price £2.

AMPLION Permanent Magnet Moving Coil Speakers, type M.C.22, complete with multi-ratio transformer; 30/-.

15,000 Ohm Wire Wound Potentiometers, 1/6; Centralab potentiometer volume controls, 50,000 ohms, 2/-; Colvern-tats, logarithmically wound, potentiometers, 6,000 ohms, 1/9.

WIRE Wound Resistances, any value, carry 20 m.a., 2/-, 40 m.a., 3/-; 60 m.a., 4/-; 120 m.a., 5/6.

WIRE Wound 5-watt Resistances, 3,500, 4,000, 7,500, 8,500, 9,000, and 10,000 ohms; 1/- each.

EDISON BELL Wire Wound Clip-in Resistances, 10,000, 60,000, 70,000, 80,000, and 90,000 ohms; 1/3 each.

HEAVY Duty Variable Resistances (slider type), wound on porcelain, 200 ohms, 1 amp., 2/6; 350 ohms 1 amp., 2/6; 2,000 ohms ½ amp., 5/-; 500 ohms ½ amp., 5/-; 50 ohms 2 amps., 2/6; B.T.H. electric gramophone motors, induction type, 100-250 volts, A.C., 30/- complete; double spring gramophone motors, complete 15/-, single spring 9/-; B.T.H. A.C. and D.C. motors, 55/-.

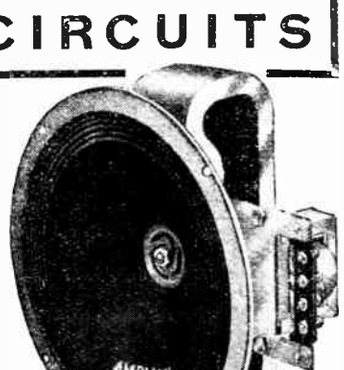
S. G. BROWN'S Microphone Amplifiers (Microbox); listed £5/5, our price 7/6.

CROYDON Rotary Converters, input 220 D.C., output 220 A.C., 160 v.a.; £4/10.

WESTERN ELECTRIC Public Address Speaker Horns, weatherproof, exponential, 7ft. long, bell 22×14, fit practically any unit, constructed of solid timber, weight 100lb.; 25/-, carriage forward.

(This advertisement continued in third column.)

SPECIALLY DESIGNED for QUIESCENT PUSH-PULL CIRCUITS



AMPLION

Q.P.P. SPEAKER

PERM-MAG MOVING COIL

The Quiescent Push-Pull circuit is a revolutionary development in Battery set design, by using the very best permanent magnet speaker you can obtain life-like reproduction and volume which is equivalent to an all-mains set. We have designed the Amplion M.C.22 Model Q.P.P. speaker with a special transformer which conforms with the requirements of the set designer. Fit the Amplion and ensure the complete success of your Push-Pull battery circuit. The speaker to ask for is The Amplion M.C.22, Model Q.P.P.

PRICE **39/6**

RECOMMENDED BY SET DESIGNERS

AMPLION

AMPLION (1932) LTD., 82-84 ROSOMAN STREET, LONDON, E.C.1. CLERKENWELL 5440.

Components, etc., for Sale.—Contd.

(This advertisement continued from first column.)

EKCO Microphones, complete with transformer, a really fine job; 18/6

S. G. BROWN'S Power Units, consisting of tapped mains transformer, Westinghouse rectifier, and T.C.C. electrolytic condenser, output 6v. 1 amp., for charging and operating; 21/-, listed £3/15.

WESTINGHOUSE Rectifiers, 120 volts at 20 m.a., 6/6; 180 volts at 30 m.a., 8/6; 8 volts at 0.5 amp., 6/6.

AMPLION Pick-up with arm and volume control; 16/6; Clarostat wirewound potentiometer, 50,000 ohms, 2/6.

ALL the Following Lines 6d. Each, or 5/- dozen Assorted.—Trimming condensers: Mullard half-watt resistances, 60,000 and 16,000 ohms; vacuum resistances, 15,000 and 10,000 ohms; shielded S.G. or Pentode leads; Dubilier 0.01 condensers; 2 meg., 1 meg., ½ meg. metallised resistances; 2ft. lengths of screened wire; 5-pin valve holders; 4-pin valve holders; any size grid leaks and condensers; fuse bulb with holder; Crabtree snap 5-amp. switches.

FOR Cash Only.—The following valves, guaranteed as new, at 60% off list price: M.P.Pen; U.U.60 250; P.T.625; M.V.S.G.; A.C.Pen.; V.D.S.; U.U.120-350; D.H.A.C.P.; D.P.T.; 84V.A.; M.S.4B; A.C. S.G., A.C. H.L.; A.C.P.T.; 904V.

ALL Orders to 20-22-24, High St., Clapham, S.W.4. Callers to High St., Clapham (Macaulay 2188). Closed 1 o'clock Wednesday. Open till 9 o'clock Saturday. Nearest Station Clapham North Underground. [1674

EVERYTHING for Movies and Talkies.—'Phone, write or, better still, call and inspect immense stock of bargains.

ILLESTRA ENTERPRISES, 159, Wardour St., London, W.1. Tel.: 6889 Gerrard [1621

NEWTH'S Offer, Brand new, guaranteed, set manufacturers' surplus:—Mains transformers, tapped and screened primary, L.T. windings, C.T., 500-0-500 at 120 m.a., 22/-; 450-0-450 at 120 m.a., 21/-; 350-0-350 at 120 m.a., 20/-; above have following windings: 4 volts 2.5 amps., 4 volts 5 amps., 4 volts 2 amps.; 325-0-325 at 80 m.a., 4 volts 2.5 amps., 4 volts 4 amps., 12/-; 350-0-350 at 60 m.a., 4 volts 2.5 amps., 4 volts 3 amp., 12/-; 250-0-250 at 60 m.a., 4 volts 1 amp., 4 volts 1 amp., 4 volts 3 amps., 12/6; special jobs for "W.W." Straight 5, 25/-; "W.W." Monodial, 21/-; "W.W." Baby Super Het, 16/-; for Westinghouse metal rectifiers, H.T.8, 12/6, H.T.9, 16/-; smoothing chokes, 20 henries, 120 m.a. (400 ohms), 9/-; 50 henries, 60 m.a. (600 ohms), 30 henries, 60 m.a. (500 ohms), 6/6; 20 henries, 30 m.a. (500 ohms), 5/6; condensers, G.E.C., 375 D.C., or 250 A.C. working, 1 mfd., 1/-, 2 mfd., 1/9, 4 mfd., 2/6; 1,500 test, 1 mfd., 1/8, 2 mfd., 2/4, 4 mfd., 4/-; multiple blocks, 1,500 test, 2/0 mfd., 4+4, 2+2, 2+2+2+1+1, 11/-; 11 mfd., 4+2+2+2+1, 6/9; R.I. Peraflex transformers, 6/-; variable condensers (H.M.V.), 2 gang, semi screened, with trimmers, list 25/-, at 6/-; H.M.V. screened chokes, 1/-; constructors' kits, Mullard Radio for Million A.C.3, sealed cartons, with valves (354V., 84V., Pen.4V.), list £6/10, 72/6; battery model, list £5/10, 70/-; Ready Radio 303, 3-valve battery kit, with Mullard valves, list £3/10, £2/-; moving coil speakers, U.S.A. manufacturers' type Rolas, complete with multiple ratio transformers, 6 volt-18 ohms), 110-175 volts (2,000 ohms), 90/130 volts (2,500 ohms), 200/240 volts (6,500 ohms), all 17/- each; A.C. models, 30/-; Magnavox X cone, list 6, £5/10 models (6 volt units only), with transformer, 22/-. All carriage paid, c.o.d., or call Newth's Master Radio, 51, George St., Hanover Sq., London, W.1. [1717

SOUTHERN RADIO'S Guaranteed Wireless Parcels.—Mains transformers, fully tapped primary, 200/250v. 50 cycle centre tapped, L.T., 250-0-250, 60 m.a., 4 volts 1 amp., 4 volts 3 amps., 11/- each; 350-0-350, 60 m.a., 4 volts 2 amps., 4 volts 4 amps., 13/- each; 350-0-350, 120 m.a., 4 volts 1 amp., 4 volts 2 amps., 4 volts 4 amps., 18/- each; 450-0-450, 120 m.a., 4 volts 2.5 amps., 4 volts 4 amps., 4 volts 2 amps., 19/6 each; 500-0-500, 120 m.a., 4 volts 2.5 amps., 4 volts 5 amps., 21/- each.

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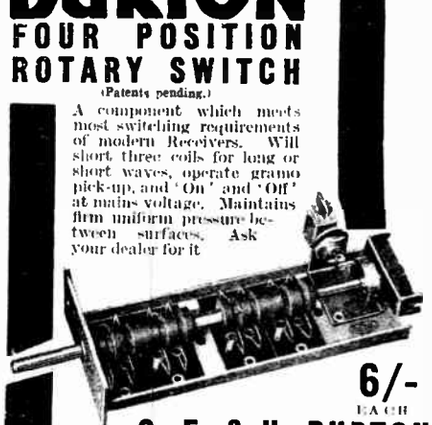

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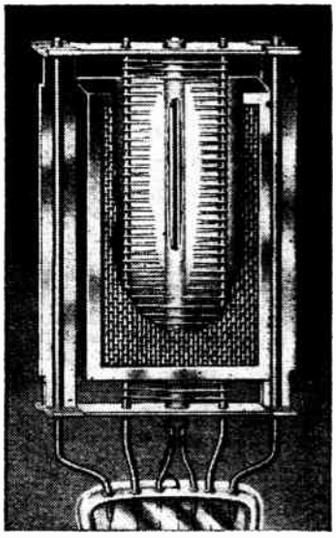

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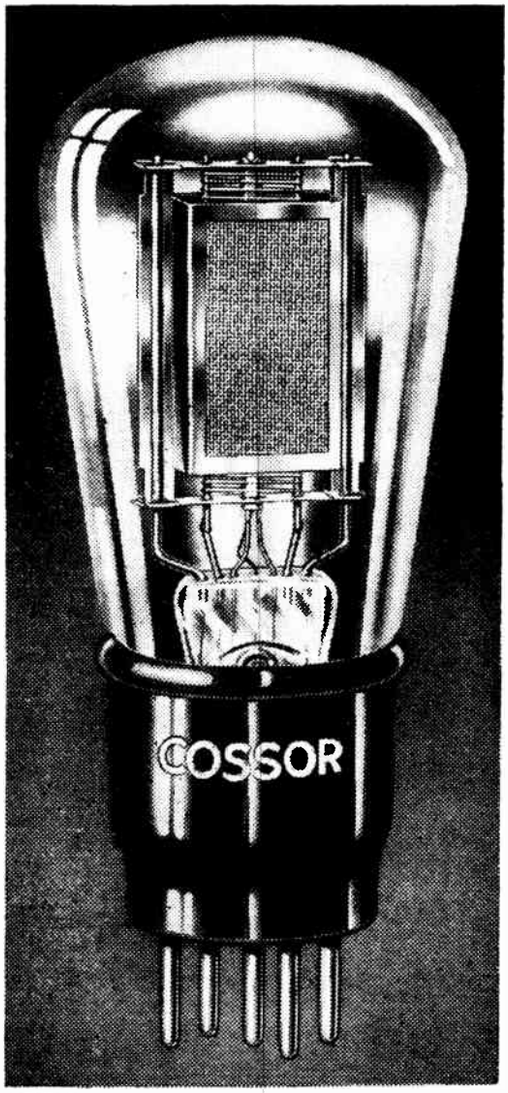

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WEDNESDAY

FEBRUARY THE FIFTEENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL Orchestral concert from Bournemouth. Professor H. J. Laski: "What is the State?" Symphony concert from Queen's Hall. Strange Music.

LONDON REGIONAL Ballad concert. Organ recital. "Merry-go-Round," feature programme by C. Denis Freeman. Instrumental concert.

MIDLAND REGIONAL Gramophone recital. Song and instrumental recital. An orchestral-ballad concert.

NORTH REGIONAL "Beckside Chronicles," by Zachariah Briggus. "Don Giovanni," Mozart. Act 1, from the Alhambra Theatre, Bradford. Lady (Ernest) Simson: "Individual Happiness in an Industrial World." Orchestral concert.

WEST REGIONAL Orchestral concert from National Museum of Wales. Mr. Emrys Pride: "The Social Question."

SCOTTISH REGIONAL Ballad concert. London Regional programme.

BELFAST Orchestral concert from Strammillis.

ABROAD

LANGENBERG Dances of the Bees, by the Station Orchestra.

PRAGUE The Czech Philharmonic Orchestra, conducted by F. Stupka.

RADIO PARIS The Lamoureux Concert Society, conducted by A. Wolff.

STRASBOURG Concert by the Besançon Concert Society.

WARSAW Pianoforte recital by A. Borovski.

ATHLONE

413 metres; 60 kW.; and CORK, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Weather Report, Stock Report, and Light Music on Gramophone Records. **6.0,** Popular Music on Gramophone Records. **6.15,** Programme for Children. **7.0** Light Music on Gramophone Records. **7.20,** News Bulletin. **7.30,** Time Signal. **7.31,** Gaelic Talk. **7.45,** German Lesson. **8.0,** Military Band Concert. **9.0,** Contralto Solos by Sydney Jameson. **9.15,** Variety Programme with Sketches by Fay Sargent and Company. **9.45,** Baritone Solos by Jascha Maccabi. **10.0,** The Station Orchestra. **10.30,** Time Signal, News, Weather Report, and Close Down.

BARCELONA

RADIO - BARCELONA, Call EAJ1, 348.8 metres; 8 kW.—6.0 p.m., Trio Concert. **7.0,** Request Gramophone Records. **7.30,** Exchange Quotations and Probable Relay from the Azuntamiento. **8.0,** Popular Music on Gramophone Records, followed by News. **9.0,** Chimes from the Cathedral, Weather, Exchange Quotations, and Market Prices. **9.5,** Concert by the Station Orchestra: March, The League of Nations (Lincke); Selection from La Cautiva (Guridi); Waltz (Percy); Dance from Henry VIII (German); Causetic (Cui); March from Cydalise et le Chévrepied (Pierné). **10.0,** Recitations. **10.15,** Violin and Pianoforte Recital: Berceuse (Fauré); Mazurka in A Minor (Chopin-Kreisler); Gavotte (Bach-Kreisler); Rondo (Schubert-Friedberg). **10.14,** Concert by the Station Orchestra: Overture, Oberon (Weber); Selection from Der Rosenkavalier (R. Strauss); Allegro-Allegretto alla Marcia (Rimsky-Korsakov). In the interval at **11.0,** Press Review. **11.15,** Popular Music on Gramophone Records. **12 Midnight** (approx.). Close Down.

BARI

269.8 metres; 20 kW.—7.0 p.m., Agricultural Notes, Tourist Talk, and Dopolavoro Announcements. **7.20,** Giornale Radio and Weather. **7.30,** Time Signal and Announcements. **7.35,** Concert of Chamber Music; Soloists: Franco Ruggiero (Pianoforte), Milena Barberio (Soprano), and Nilde Pignatelli (Violin): Overture, Martha (Flotow); Pianoforte Solo: Suite in Old Style (Cilea); Soprano Solos: (a) Stornelli (Guarino), (b) Ninna nanna (Castelnuovo Tedesco); Violin Solo Rondo (Mozart-Kreisler); Soprano Solo: Stornellatrice (Respighi); Violin Solos: (a) Ninna nanna (Novikov), (b) Fiordaliso (Cattolica); Pianoforte Solos: (a) Nocturne (Respighi), (b) Papillons (Ole Olsen); Soprano Solo: Chanson d'automne (Napolitano); Pianoforte Solos: (a) Andaluza (Falla), (b) La Cathédrale engloutie (Debussy); Soprano Solo: Con gli angioli (Savasta); Violin Solo: Concerto in E (Mendelssohn); Pianoforte Solo: Caprice in A Minor, Op. 33 (Mendelssohn). In the interval, Literary Notes. **9.55,** News Bulletin.

BASLE.—See **Schweizerischer Landessender.**

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—11.55 a.m., Nauen Time Signal. **12.35 p.m.,** News Bulletin. **1.0,** Gramophone Concert from **Berlin (Witzleben). 1.45,** Programme for Young People—Two Carnival Plays (Hans Sachs). **2.30,** Weather and Exchange. **2.45,** Reading of Friedrich Schnack). **3.0,** Talk: Sports Education. **3.30,** See **Hamburg. 4.10,** Legal Talk. **4.30,** Talk: God and the World in Mediæval Literature. **5.0, Harmonium Recital, by Ernst Schauss: Festliches Präludium; Romance (Reger); Caprice (Bizet); Le Sommeil (Bizet); Air (Gluck); Vesper (Bortniansky); Gigue (Rameau). 5.30,** Advanced Shorthand Lesson and Dictation. **5.55,** Weather and Announcements. **6.0,** French Lesson. **6.30,** A Poem. **6.35,** Part Relay of the First Meeting of the International Congress of the Motor Trade (on Gramophone Records). **7.0,** Concert from **Breslau. 8.0,** Aphorisms on Worldly Wisdom. **8.15,** Recital of Old Italian Music for Strings by the Chamber Orchestra, conducted by Schulz-Dornburg; Soloists: Stefan Frenkel (Violin) and V. Ernst Wolff (Harpsichord): Sonata for Flute and Strings (Scarlatti); Concerto for Four Strings and Harpsichord, Op. 6, No. 10 (G. Torelli); Violin Concerto in B Flat, Op. 4, No. 1 (Vivaldi); Concerto grosso in D for Strings, Op. 6, No. 1 (A. Corelli); Die Torgauer Gagliarde and Fourteen Dances (Carlo Farina). **9.15,** Weather, News, and Sports Notes. **9.45,** Weather Report for Shipping. **10.0,** Dance Music from **Berlin (Witzleben). 11.0** (approx.), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—5.5 p.m., Song Recital by Cida Lau (Soprano): Songs (H. Wolf): (a) Ueber Nacht, (b) In dem Schatten meiner Locken, (c) Verborgenheit, (d) Die Spröde; Songs (R. Strauss): (a) Einerlei, (b) Ich schwebe, (c) Schlechtes Wetter, (d) Ständchen. **5.30,** Günter Eich reads from his own Works. **5.55,** The Witzleben Station informs its Listeners. . . . **6.0,** Topical Talk. **6.10,** Talk: The Evening's Musical Programme. **6.20,** Variety Programme with Music. **7.20,** Concert relayed from the Philharmonie. The Station Orchestra, conducted by Eugen Jochum. Soloist: Erica Morini (Violin). Violin Concerto in D (Mozart); The Ninth Symphony in D Minor (Anton Bruckner). In the interval at **7.50,** News and Sports Notes. **9.10,** Weather, News and Sports Notes. **9.30** (approx.). Dance Music from the Café Berlin. **11.0** (approx.), Close Down.

BERNE.—See **Schweizerischer Landessender.**

BEROMUNSTER. — See **Schweizerischer Landessender.**

BODEN.—See **Stockholm.**

BODO.—See **Oslo.**

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—7.30 p.m., News and Market Prices. **7.40,** Tourist Talk. **7.55,** Lottery Results. **8.0,** Agricultural Talk. **8.15,** News and Weather. **8.30,** Concert of Light Music.

BRATISLAVA

279 metres; 14 kW.—4.0 p.m., Mozart Song Recital: Two Songs; Un moto di gioia; Alleluia; Bella mia fiamma; Ch'io mi scordi di te? Aria from Il re pastore with Violin obbligato. **4.30,** Talk for Children. **4.40,** Popular Music on Gramophone Records. **4.45,** Polish Lesson. **5.0,** Hungarian Transmission: Literary Talk and Pianoforte Solos by Gitta Hornova: Nocturne (Chopin); Mazurka (Chopin). **6.0,** See **Prague. 6.20,** See **Brno. 7.0,** See **Prague. 9.15** (approx.), Close Down.

BREMEN.—See **Hamburg.**

BRESLAU

325 metres; 60 kW.; and GLEIWITZ; 253 metres.—12.5 p.m., Weather for Farmers. **12.10,** Gramophone Concert: Coronation March from Die Folkunger (Kretschmer); Suite from Carmen (Bizet); Serenade d'Ambrosio); Guitarre (Moszkovsky), Komm in die Gondol, from Eine Nacht in Venedig (Joh. Strauss); Waltz, Wiener Bonbons (Joh. Strauss); Overture, Gipsy Love (Lehar); Vivat Hungaria from Der Teufelsreiter (Kálmán). **12.45,** Time, Weather, News, and Exchange Quotations. **1.5,** Gramophone Concert (contd.): Overture, Orpheus in the Underworld (Offenbach); Ballet Intermezzo (Bayer); Selection from The Maid of the Black Forest (Jessel); Waltz, Traumideale (Fucik); Tango, Abschied (Bleich); Foxtrot, Rhythmik (Robrecht); Oberländer (Gungl); Potpourri, Johann Strauss spielt auf (Morena). **1.45,** Sponsored Programme with Gramophone Records. **2.10,** Agricultural Prices. **3.0,** Two Talks for Parents: (a) School Reform, (b) The Technical School. **3.30,** Pianoforte Recital by Centa Mancher: Thirty-two Variations in C Minor (Beethoven); Ballade in G Minor (Chopin). **4.0,** Talk: Village Life in Leobschütz. **4.20,** Agricultural Prices. **4.25,** Reading from an Upper Silesian Political Newspaper. **4.40,** Humorous Talk on Winter Sports. **5.0,** Concert of Light Music: Waltz, Lustiges Wien (Meisel); Foxtrot on The Parade of the Tin Soldiers (Jessel-Löhr); My Golden Baby, from The Flower of Hawaii (Abraham); Wenn du gehst, dann ist mir so zum Weinen, from Morgen geht's uns gut (Benatzky); Russian Fantasia (Grothe-Kirchstein); Song Potpourri, Servus Wien (Dostal); Zum Tanz (Kernbach). **6.5,** Talk: Friedrich List and Colonial Expansion. **6.30,** Weather for Farmers. **6.35,** Concert by the Silesian Philharmonic Orchestra, conducted by Ernst Prade; Suite, Der Karneval (Dittersdorf); Comedy Overture (Rezniecek); Waltz from Der arme Reinhold (Gross); Spanish Caprice (Rimsky-Korsakov); Overture, Der Waldmeister (Joh. Strauss); Debrienwalzer (Jos. Strauss). **8.0,** News. **8.10,** Gustav Freytag Programme. **9.0,** Time, Weather, News, Sports Notes, and Programme Announcements. **9.30** (from **Gleiwitz**), Dance Music, relayed from the Upper Silesian Radio Ball in Aid of the Winter Relief Fund. **11.0** (approx.), Close Down.

BRNO

342 metres; 35 kW.—5.25 p.m., German Transmission News and Talk; Women in the Professions, and Talk for Workers. **6.0,** See **Prague. 6.5,** Talk: The Musical Programmes of Brno. **6.20,** Popular Concert. **7.0,** See **Prague. 9.15** (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—12 Noon, Concert, conducted by André Felleman, relayed from the Grand Hotel, Antwerp: March (Gilbert); Suite, Caucasian Sketches (Ippolitov-Ivanov); Songs by Edmond Tolkovsky: (a) Là-haut sur le Glacier (Doret), (b) Figaro's Song from The Barber of Seville (Rossini); Foxtrot, Madeline (Brown); Eccentric Love (Rosetti); Saxophone Solo by Jules Lewis: The Phantom Melody (Ketelbey); Selection from One Hour with You (Heymann). **1.0 p.m.,** Le Journal Parlé. **1.10,** Light Music on Gramophone Records. **5.0,** Quintet, Op. 114, Die Forelle (Schubert). **5.40,** Gramophone Records: Peer Gynt Suite (Grieg); Ronda aragonesa (Granados). **6.0,** Talk. **6.15,** Fantastic Dances (Turina), on Gramophone Records. **6.30,** Mélodies persanes (Saint-Saëns), by Mme. Van Dromme (Vocalist), with Commentary by M. Rubeau. **7.5,** Bulgarian Rhapsody, Vardar (Vladigerov), on Gramophone Records. **7.15,** Talk: A Journey to Lithuania. **7.30,** Talk on Hygiene. **8.0,** Gala Concert by the Radio Orchestra, conducted by Franz André, on the occasion of the Congress in Brussels of the Union Internationale de Radio-diffusion: Soloist: Maurice De Groote (Bass): Fantasia on Spanish Themes (Gevaert); Songs: (a) Ley'm plorer (Defraicheux), (b) Mijn Moederspraak (Benoit); Concerto in F for Pianoforte and Orchestra (Gershwin); Selection from Victoria and her Hussar (Abraham); Catalan Caprice (Albeniz); Song: Old Man River (Kern); Anglo-American Jazz Potpourri (André and Candrix); Negro Spirituals (arr. Lawrence Brown): (a) Didn't my Lord deliver Daniel, (b) Who's been here? (c) Hear the Lam's a-cryin', (d) Goin' to ride up in the Chariot; Symphonic Suite (Ibert). In the interval, Talk and Readings: The Belgian Writer, Maurice Saldbe. **10.0,** Le Journal Parlé. **10.10,** Hot Jazz, with Commentary. **10.40,** Light Music on Gramophone Records. **11.0** (approx.), Close Down.

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW.—Programme in Flemish. 12 Noon, Popular Music on Gramophone Records. **1.0 p.m.,** Le Journal Parlé. **1.10,** Concert, conducted by André Felleman, relayed from the Grand Hotel, Antwerp: Selection from Wild Violets (Stolz); Songs by Edmond Tolkovsky: (a) Kindje wat ben je toch zacht (Mortelmans, (b) Vlaanderen (Veremans); Potpourri, From Pontine to Pilate (Morena); Rubensmarche (Benoit). **5.0,** Dance Music from the St. Sauveur Palais de Danse. **6.0,** Louis Mortelmans' Song Recital, by Mme. Maelfeyt-Rovies. **6.15,** Reading. **6.30,** Light Music on Gramophone Records. **7.15,** Talk: The Theatre and Films. **7.30,** Review of International Events. **8.0,** Mendelssohn Music on Gramophone Records: Overture, Fingal's Cave; Spinning Song (arr. Rachmaninov); Two Songs without Words; Rondo capriccioso; Scherzo and Wedding March from A Midsummer Night's Dream. **8.30,** Recitations. **8.45,** Orchestral Concert: Soloists: Charles Scharrès (Pianoforte) and F. Wangermée (Trumpet); Symphony (Gluck); Concerto in D Minor for Pianoforte (Mozart); Three Fantasias (Gibbons). **9.35,** In diesem Wetter, from the Kindertotenlieder (Mahler) on Gramophone Records. **9.45,** Concert (continued): Symphony (Gossec); Pianoforte Solos; Concerto for Trumpet and Orchestra (Haydn). **10.30,** Le Journal Parlé. **10.40,** Light Music on Gramophone Records. **11.0** (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—6.40 p.m., Gramophone Records of Light Music. **7.0,** Violin Recital. **7.20,** Song Recital. **7.40,** Talk. **7.55,** Pianoforte Recital. **8.20,** 'Cello Solos. **8.45,** News Bulletin.

BUDAPEST

550 metres; 18.5 kW.—Also relayed on 840 metres from 5.30 to 11.0 p.m. 4.0 p.m., Schubert Concert by the Opera House Orchestra, conducted by F. Friedl: Symphony No. 3 in D; Ballet Music from Rosamund; Symphony in B Minor—the Unfinished Symphony. **5.10,** Italian Lesson. **5.30,** Hungarian Folk Songs on Two Pianofortes. **6.20,** Programme by Koloman Porzsolt. **6.45,** Concert by the Budapest Concert Orchestra, relayed from the Academy of Music; Conductor, Hans Knapperthbusch; Soloist, Jeanne Marie Darré (Pianoforte): Overture, Oberon (Weber); Pianoforte Concerto in A (Liszt); Scherzo (Berlioz); Symphony No. 5 (Tchaikovsky). **8.45** (approx.), News, Weather, and Popular Music on Gramophone Records. In an interval at **9.45,** Boy Scouts Report. **11.0** (approx.). Close Down.

CASSEL.—See **Frankfurt.**

COPENHAGEN

281 metres; 0.75 kW.; and KALUNDBORG, 1,153 metres; 7.5 kW.—11.0 a.m., Time and Chimes from the Town Hall. **11.5,** String Ensemble Concert, relayed from the Wivex Restaurant. **1.0 to 2.0 p.m.,** Interval. **2.0,** Concert by Louis Preil's Instrumental Ensemble. In the interval at **2.45** (approx.), Talk for Women. **4.0,** Gramophone Concert: Eidé Norena: To Spring (Grieg); Pierre Fonchy Song from the Third Act of Le Roi d'Vs (Lalo); Alfred Piecaver: Macushla (Dermont); Pablo Casals and Alfred Cortot: Seven Variations on a Song from Mozart's Magic Flute (Beethoven); Torkel Magnusdal: Sangen til Mor (Haugen); Dan Donovan: It was so beautiful (Freed and Barris); The Boswell Sisters: Down among the Sheltering Palms (Brockmann and Olman); The Three Ginx: Millie (I. Brown). **4.40,** Exchange and Fish Market Prices. **4.50,** Talk: Psychic Research. **5.20,** French Lesson for Beginners. **5.50,** Weather Forecast. **6.0,** News and Announcements. **6.15,** Time Signal. **6.30,** Agricultural Talk. **7.0,** Chimes from the Town Hall. **7.5,** Concert of Popular Danish Music; The Radio Orchestra, conducted by Launy Grøndahl; Soloist: Immanuel Franksen (Songs); Prelude to Act Two of Et Folkesagn (J. P. E. Hartmann); Jagten (Gade); Elverpigernes Dans (Gade); Melody from Summer Life (Louis Glass); Songs: (a) Vil du vaere staerk og fri (Weyse), (b) Det var Ridder Herr Aage (Weyse), (c) Ingen Blomst i Verdens Lande (Heise), (d) Der var en Svend med sin Pigelil (Heise); Overture, Youth and Madness (Dupuy); Tarantelle from En Karnevalsfest (Hartmann); Prelude to Frode (Beehgaard); Gallop, Sålut for August Bournonville (Lumbye). **8.0,** Sudden Onslaught—Sketch (Rösler). **8.15,** Topical Talk. **8.45,** News. **9.0,** Chamber Music by Holger Jespersen (Flute), Torben Svendsen ('Cello), and Folmer Jensen (Pianoforte): Trio in G Minor, Op. 63 (Weber); Chamber Sonata in C, Op. 48 (Pierné). **9.35,** Dance Music from the Ritz Restaurant. In the in-

terval at 11.0, Time and Chimes from the Town Hall. 11.30 (approx.), Close Down.

CORK.—See **Athlone.**

DANZIG.—See **Heilsberg.**

DRESDEN.—See **Leipzig.**

DUBLIN.—See **Athlone.**

FECAMP

223 metres; 10 kW.—**6.0 to 7.0 p.m.,** Programme in English by the I.B.C. Announcers: C. Danvers Walker, R. Chene, and B. McNab. **6.0,** Vocal and Orchestral Concert for Portsmouth Listeners: Stephanie Gavotte (Czibulka); Songs: (a) Captain Mac (Sanderson), (b) The Driver of the 8.15 (Longstaffe); Selection from The Beggar's Opera (Gay); Songs: (a) The Wheeltapper's Song (Charles), (b) I travel the Road (Parsons); Serenade (Heykens). **6.30,** Concert for Southsea and Isle of Wight Listeners: Xylophone Solos. Jovial Jasper (Green); Aeroplane Polka (Gaston); Alice in Wonderland (Dubin); Xylophonia (Green); Dance of the Marionettes (Gaston); Puttin' on the Ritz (Dubin); Orchestra: Crazy Pirouette (Frisk). **7.10,** Programme to be announced. **10.0** till Close Down, Programme in English by the I.B.C. **10.0,** Dance Music. **11.0,** Spanish Music: Orchestra: Old Spanish Song (Aubert); Accordion Band: Selection from Carmen (Bizet); Orchestra: Serenata (Moszkovsky); Handbell Song: In Sunny Seville (Whitlock); Accordion Solo: Waltz, Muella (Chabrier); Song: The Toreador Song from Carmen (Bizet); Xylophone Solo: Spanish Dance (Moszkovsky). **11.30,** Song Recital: Annie Laurie (Traditional); The Drum Major (Newton); Loch Lomond (Traditional); The Gay Highway (Drummond); Maire my Girl (Aitken); Stonecracker John (Coates); Vale (Kennedy Russell); The Wheeltapper's Song (Charles). **12 Midnight,** Variety Concert: Song: You used to be my Sweetheart (Towers); Duet: Laughs, or lave à la mode; Glockenspiel Solo: The Black Forest Chiming Clock (Doppler); Song: They all make love but me (Damarell); Laughing Gigolo; Sketch, Paradise Alley; Song, Hooch, but she was a Bonny Wee Lass. **12.30 a.m. (Thursday),** Light Music Selection from Lilac Time (Schubert); St. Patrick's Day; March (Brase); Vocal Quartet, Way Down in Georgia (Traditional); Pianoforte Solo, Just hummin' along; Vocal Duet, Old King Cole; Song, Mother Machree (Ball); Me and the Man in the Moon (Monaco). **10.0,** Concertina Solos: Bonnie Lass o' bon accord (Skinner); Hornpipe Medley (arr. Dale); The Road to the Isles (Fraser); Orange and Blue (Dale); Irish Medley (arr. Dale); Lopeziana (Alter); Scottish Reels (arr. Dale); Marilyn (Alter). **1.30,** Songs: Airman, Airman (Hargreaves); Girl Friend of a Boy Friend of mine (Donaldson); Singin' in the Bathtub (Magidson); My baby just cares for me (Donaldson); I still believe in you (Akst); I took Jane for a Walk in the Rain (Hargreaves); I've never seen a Smile like yours (Johnson); We must all pull together (Weston). **2.0,** Dance Music **2.57,** I.B.C. Goodnight Melody. **3.0** (approx.), Close Down.

FLENSBURG.—See **Hamburg.**

FLORENCE.—See **Turin.**

FRANKFURT

259 metres; 17 kW.; and **CASSEL, 245.9 metres.—4.0 p.m.,** See **Stuttgart. 5.15,** Exchange Quotations. **5.25,** Talk: Suburban Housing Estates. **5.50,** Talk by Felix Timmermann, followed by Reading from Palliere (Timmermann). **6.15,** Time, Programme Announcements, Weather, and Exchange Quotations. **6.30 to 8.0,** See **Stuttgart. 8.0,** Waltz-Potpourri Concert by the Radio Orchestra, conducted by Hans Rosbaud. **8.50,** The Return of Herr Mathäus and other Stories, by Paul Laven. **9.20,** Time, News, Weather, and Sports Notes. **9.45,** See **Munich. 11.0** (approx.), Close Down.

FREDRIKSSTAD.—See **Oslo.**

FREIBURG.—See **Stuttgart.**

GENEVA.—See **Radio-Suisse Romande.**

GENOA.—See **Turin.**

GLEIWITZ.—See **Breslau.**

GOTEBORG.—See **Stockholm.**

GRAZ.—See **Vienna.**

HAMAR.—See **Oslo.**

HAMBURG

Call ha (in Morse), **372 metres;** 1.5 kW. Relayed by **Bremen, 269.8 metres; Flensburg, 227.4 metres; Hanover, 566 metres;** and **Kiel, 232.2 metres.—3.30 p.m.,** Concert by the Hamburg Philharmonic Orchestra, conducted by Horst Platen: Heiteres Vorspiel (Wartisch); Suite, Op. 25 (Müller-Hartmann); Prelude and Serenade from Der Musikant (Bittner); Air (Bach); Leonore Overture, No. 3 (Beethoven). **4.30,** Talk in North German Dialect. **4.55,** Concert of Music by Ernst v. Charmann by the Norag Chamber Orchestra, conducted by the Composer; Soloists: Erna Kroll-Lange, Herbert Ernst Groh, Erwin Bolt, Bernhard Jakschat, and the Norag Choir: Foxtrot; Two Songs for Mixed Choir and Orchestra: (a) Nachts, (b) Nun bin ich wieder weit von Dir; Duet, Wie ein Märchen from Liebe im Fasching; Two Songs: (a) Mein Städtchen liegt so ferne, (b) Ueber'n Garten durch die Lüfte; Himmelbett-Ensemble from Haremsnächte; Liebchen komm' zum blauen Nil for Orchestra; Duet from Die beiden Liesel; Songs: (a) Wiener Lied, (b) Frau'n Ihr kleinen Frau'n; Finale from Haremsnächte; Selection from Ali-Ben-Bäbu (Marschner-v. Charmann; (a) Drinking Song, (b) Duet, Komm' an mein Herz, (c) Duet, Neige Maria, zu mir dich nieder. **5.50,** Frankfurt Exchange and Market Prices. **6.0** (from **Bremen**), Talk: The Centenary of the Oldenburg Theatre. **6.25,** Weather Report. **6.30,** Recital of North German Folk Songs, with Introductory Talk. **7.0,** A German Carnival Ball. Part One: The German Rococo Period. Part Two: The Biedermaier Period. Part Three: A Carnival in Munich. Part Four: 1933. **9.0,** Time and News. **9.20,** Topical Talk. **9.30** (from **Bremen**), Concert of Chamber Music: Concerto in D Minor (Bach); Chamber Symphony (E. Wolf-Ferrari). **10.25,** Concert, relayed from the Astoria, **Bremen.**

HANOVER.—See **Hamburg.**

HEILSBERG

276.5 metres; 60 kW.; and **DANZIG, 453.2 metres.—12 Noon,** Concert by the Small Station Orchestra, conducted by Eugen Wilcken: Selection from Where the Lark Sings (Lehar); Waltz from Countess Maritza (Kálmán); Tango, Jealousy (Gade); An der Wiege (Richter); Selection from La Gioconda (Ponchielli); Suite orientale (Popy); Addio a Napoli (Murzilli); Vor einer alten Spieluhr (Müller-Melborn); Overture, Nakiris Hochzeit (Lincke). In the interval at **12.20 p.m.,** News. **1.30,** Sponsored Programme with Gramophone Records. **2.0,** Agricultural Prices and Exchange Rates. **2.20,** Practical Hints. **2.30,** Programme for Children. **3.0,** Talk for Parents: Education in England. **3.30,** See **Hamburg. 4.35,** A Discussion on Cattle Rearing, relayed from **Freienwalde. 5.15,** Agricultural Prices. **5.20,** Ice Report. **5.30,** Otto Siegl Song Recital by Henny Wolff. **6.0,** Bridge Lesson. **6.25,** Dance Music by the Small Station Orchestra, conducted by Eugen Wilcken, and the Ednur Runde Orchestra. In the interval at **7.0** (approx.), Weather and News. **8.10** (from **Danzig**), Danzig in Song and Verse—a Mosaic of the Past and the Present (Carl Lange). **8.45,** Song Recital by Tony Jaeckel (Soprano and Lute) and Gerhard Rüchel (Violin). **9.15,** Weather, News and Sports Notes. **9.30** (approx.), Light Music on Gramophone Records. **11.0** (approx.), Close Down.

HILVERSUM

Announced **HUIZEN, 296.1 metres;** 20 kW. (7 kW. up to **4.40 p.m.**).—Programme of the Christian Radio Society (N.C.R.V.). **11.40 a.m.,** Police Notes. **11.55,** Quintet Concert: Overture, Si j'étais roi (Adam); Selection from The Sleeping Beauty (Tchaikovsky); Selection from Die Fledermaus (Joh. Strauss); March, Prinz Eitel Friedrich (Blankenburg); Interlude: Two Choral Pieces on Gramophone Records; Selection from Maritana (Wallace); Selection from Norma (Bellini); Habanera (Bizet); Selection from La Traviata (Verdi). **1.40 p.m.,** Mon Lac (Witkowski), on Gramophone Records. **2.10,** Vocal and Instrumental Concert: Four Dutch Songs for Contralto; Sonata in B flat for Violin and Pianoforte (Mozart); Allegro moderato from the Unfinished Symphony (Schubert), on Gramophone Records; Contralto Solos: (a) Trauer und Trost (Cornelius), (b) Reiselied (Mendelssohn), (c) Der Jäger (Brahms), (d) Ständchen (Brahms); Pieces for Violin and Pianoforte: (a) Adagio from the Concerto in G Minor (Max Bruch), (b) Cradle Song (Cui), (c) Poeme (Fibich); Suite, Moldavia (Smetana), on Gramophone Records; Four Dutch Songs; Five Pieces for Pianoforte (Sem Dresden); Gavotte (Loots), Minnelied for Violin and Pianoforte. **4.10,** Programme to be announced. **4.40,** Programme for Children. **5.40,** Talk arranged by the Salvation Army. **6.10,** Elementary English Lesson. **6.40,** Programme arranged by the Department of Buildings and Roads. **7.10,** Police Notes. **7.25,** News Bulletin. **7.40,** Organ Recital with interludes by a Ladies' Choir. In the interval at **8.10,** Talk. **8.50,** Talk on the N.C.R.V. **9.10,** Quartet Concert. In the interval at **9.25,** News. **10.10,** Gramophone Records of Classical Music. **11.10** (approx.), Close Down.

HORBY.—See **Stockholm.**

HUIZEN

Announced **HILVERSUM, 1,875 metres,** 8.5 kW. Programme of the Workers' Radio Society (V.A.R.A.).—**11.40 a.m.,** Concert by De Notenkrakers, conducted by D. Wins. **1.25 to 1.40 p.m.,** Interval. **1.40,** Programme for Women. **2.40,** Programme for Children. **5.10,** Concert by De Notenkrakers: Potpourri (Wilke); Chanson triste (Tchaikovsky); Russian Dance (Bortkiewicz); Slav Dance (Dvorak); Stenka rasin (Rubat); Gramophone Records: Gipsy Idyll (Ferraris); Sonja (Partos); Russian Dance (Tchaikovsky); Gramophone Records; Waltz, (Berger); Causerie (Gillet); Siempre (Bianco); Lehár Potpourri (Hubay); La Cinquantaine (Marie); Melancolia (de Micheli); March (Rosey). **6.40,** Topical Talk. **6.56,** Light Music on Gramophone Records. **7.0,** Organ Recital by C. Steyn. **7.30,** S.O.S. Messages. **7.35,** Talk. **7.55,** Concert by the Amsterdam Chamber Orchestra, conducted by J. Feltkamp, and the Waleson String Quartet: Octandre (Varèse); Quartet, Op. 23 (Hanson). **8.30,** Waar liefde woont—Play in One Act (Sterkenburg), by the V.A.R.A. Toneel. **9.0,** Talk. **9.5,** Concert (contd.): Divertissement (Riegger); Symphonietta (Cowell). **9.50,** News Bulletin. **10.0,** Concert by De Fliereluiters, conducted by H. de Groot: Soloist: Mlle. Esther Philipse (Songs); Das ist die Sonne von Arkadien (Stolz); Orientzauber (Dicker); Das schönste Gedanke (Abraham); Bed-time Story (Nicholls); Tiaton-Bomben (Borchert); Light Music on Gramophone Records: Bells of Barcelona (Connely); Song (Abraham); Tiger Rag (Rocca-Komst); Eine Walzer-Redoute (Hildebrandt); Love Me To-night (Young); Melody (Donaldson); Waltz (Durand); Popular Music on Gramophone Records: Melody (Woods); Melody (Gray); In Old Seville (Rosen); De Laatste paardentram (Raasch); Ach Willy (Majos); Solera (Demon); Melody (Alex). **11.40** (approx.), Close Down.

INNSBRUCK.—See **Vienna.**

KALUNDBORG.—See **Copenhagen.**

KIEL.—See **Hamburg.**

KLAGENFURT.—See **Vienna.**

KOSICE.—See **Prague.**

LANGENBERG

473 metres; 60 kW.—**12 Noon,** Concert, conducted by Eysoldt. A Fête in Aranjuez (Demerssemann); Cradle Song and Serenade (Dvorák); Overture, The Barber of Seville (Rossini); Waltz, Neu-Wien (Strauss); Florentine Intermezzo (Waghalter); Rococo Gavotte (Translateur); Ballet Music from La Juive (Halévy); Potpourri, Musikalisches Kunterbunt (Schmalstich); Grenadier-marsch (Wiedemann). **1.0 p.m.** (in an interval), News. **1.30,** Sponsored Programme with Gramophone Records. **2.30,** Exchange and Time Signal. **2.50,** Programme for Children. **3.30,** Programme to be announced. **4.0,** Concert. **5.15,** Talk: Legend and History in the Rhineland and Westphalia—The Legend of St. Ursula. **5.35,** Poems. **5.45,** Weather, Time, Exchange and Sports Notes. **6.0,** Talk: Penal Law as it affects Young People. **6.20,** Talk: Health before Everything. **6.35,** The World on Gramophone Records—the Mask, the Dance, and the Drama among Primitive Peoples. **7.0,** How the Old Folks sang—by Kläre Hansen. Martha Walter, Leonardo Aramesco, Wilhelm Strienz, Hans Salomon, and the Station Chamber Orchestra, conducted by Spitz. **8.0,** The Dance of the Bees—Concert by the Station Orchestra, conducted by Buschkötter, with Rieth (Recitations). Recitation: Prologue (Billinger); Flight of the Bumble Bee (Rimsky-Korsakov); Recitation: Pollen Dance (Rendl); Dance of the Bees from The Queen of Sheba (Goldmark); Recitation: Honey Dance (Rendl); In the Beehive (Ebert); Recitation: Bridal Dance (Rendl); Fantastic Sketch, Dance of the Bees (Stravinsky). **9.5,** News and Sports Notes. **9.30,** Serenade, conducted by Wolf. **11.0** (approx.), Close Down.

LAUSANNE.—See **Radio-Suisse Romande.**

LEIPZIG

389.6 metres; 120 kW.; and **DRESDEN, 319 metres.—11.5 a.m.,** Concert by the Emdé Orchestra: Overture, La Sirène (Auber); Waltz, Pariser Strassensänger (Ohlsen); Paraphrase on Horch, die alten Eichen rauschen (Rhode); Modern Dance Music; Potpourri, Sänger heraus (Ostermann); Intermezzo (Wetzel); Modern Dances; Grossmütterchen (Langer); The Mill in the Black Forest (Eilenberg); Modern Dances. In the interval at **12.0 Noon,** News. After the Concert, Exchange Quotations. **1.0 p.m.,** How to Build a Wireless Receiver. **2.0,** Talk. **2.35,** Market Prices. **3.0,** Programme for Young People. Part 1—Folk and Chamber Music by a School Choir and Orchestra. Part II—Students work for Students—Radio Picture from Leipzig University. **4.50,** Exchange Quotations, Weather and Time. **5.10,** Book Review. **5.35,** Italian Lesson. **5.50,** Report on the Berlin Motor Exhibition. **6.0,** Concert of Chamber Music. Mandoline Pieces: (a) Falling Leaves (Huber), (b) Dream Pictures (Redlinger), (c) Twilight (Fantauzzi); Zither Pieces: (a) Serenade from the Florentine Quintet (Haydn); (b) Minuet, Aschenbrödels Brauttanz (Kollmaneck); Fantasia on Johann Strauss Waltz Themes (Kollmaneck); Violin and Guitar Music: (a) Corrente (Handel), (b) Minuet (Scarlatti), (c) Gagliarde Durante), (d) Allegro and Rondo (Scheidler), (e) Fantasia, Minuet and Tarantella (Steinwender). **7.0,** Talk: The Rôle of Agriculture in the Economic Reconstruction of Germany. **7.30,** Humorous Dialogue. **8.10,** News Bulletin. **8.20,** Topical Talk. **8.30,** Hugo Wolf Song Recital by Emmy Neiendorff (Contralto); Schon streckt ich aus im Bett die müden Glieder; Ein Ständchen Euch zu bringen; Mein Liebster singt am Haus im Mondenschein; Heb' auf dein blondes Haupt und schlafe nicht; Wenn du mich mit den Augen streifst und lachst. Was sollder Zorn, mein Schatz; Nun lass uns Frieden schliessen; Der Mond hat eine schwere Klag' erhoben; Gesegnet sei das Grün und der es trägt; Benedeit die selige Mutter; Und willst du deinen Liebsten sterben sehn; Ich ese nun mein Brot nicht trocken; Ihr jungen Leute, die Ihr zieht ins Feld; Mein Liebster ist so klein; Mein Liebster hat mich zu Tisch geladen; Ich hab in Penna einen Liebsten wohnen. **9.5,** News Bulletin. **9.15** (approx.), Concert. **11.0** (approx.), Close Down.

LINZ.—See **Vienna.**

LJUBLJANA

574.7 metres; 2.5 kW.—**5.0 p.m.,** Programme in English by the I.B.C. Orchestral Concert: Blaze Away; Trees; Maybe it's the Moon; Titana; Out of the Blue; An old Vision; Pardon me pretty baby; My heart sings a broken melody. **5.30,** Phonetics Lesson. **5.0,** Russian Lesson. **6.30,** Literary Programme. **7.0,** Wagner Memorial Programme. **9.0,** Time, News, and Popular Music on Gramophone Records.

LWOW

381 metres; 16 kW.—**6.10 p.m.,** Miscellaneous Items. **6.30,** See **Warsaw. 7.0,** Choral Concert by the Eshen Revellers. **7.50,** See **Warsaw. 8.55,** Recital by Eliska Reisigova-Zdimalova, relayed from **Katowice (408 metres). 9.25,** Dance Music, relayed from **Warsaw. 9.40,** Talk in English: Marian Smoluchowski, the Famous Polish Physician. **9.55,** See **Warsaw. 10.0,** Relay of Foreign Stations. **11.0** (approx.), Close Down.

MADRID

ARANJUEZ; EAQ; 30.43 metres; 20 kW.—**10.30 p.m.,** Popular Concert. **10.45,** Radio Chronicle. **11.0,** Popular Concert (contd.). **11.35,** Talk. **11.40,** Light Music. **12 Midnight** (approx.), Close Down.

MADRID

UNION RADIO; Call EAJ7; 424.3 metres; 2 kW.—**7.0 p.m.,** Chimes, Exchange Quotations. Literary Talk: Larra; and Request Gramophone Records. **7.30,** Agricultural Talk and Request Gramophone Records (contd.). **8.25,** News Bulletin. **8.30 to 9.30,** Interval. **9.30,** Chimes, Time Signal and a Play submitted in connection with the Radio Play Competition. **11.45,** News Bulletin. **12 Midnight,** Chimes and Close Down.

MALMO.—See **Stockholm.**

MILAN.—See **Turin.**

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—**5.25 p.m.,** Concert by the Silesian Teachers' Vocal Society, conducted by Pavel Sigmund. **6.0,** See **Prague. 6.20,** See **Brno. 7.0,** Jawohl (Oh, Yes!)—One Act Comedy (Havelka). **7.45,** Concert by the Station Orchestra, conducted by B. Tvrdy. **9.0,** See **Prague. 9.15** (approx.), Close Down.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—**4.0 p.m.,** News. **4.10,** Announcements. **4.25,** Ballet Music from The Bayadere (Minkus), followed by Relay of a Foreign Station. **5.30,** Concert of Light Music from the Radio Theatre. **8.0,** Dialogue in English: A Meeting between two of the former Upper Ten. **8.55,** Time. **9.5,** Press Review.

MOTALA.—See **Stockholm.**

MUHLACKER.—See **Stuttgart.**

MUNICH

533 metres; 60 kW. Relayed by **Augsburg** and **Kaiserslautern, 560 metres;** and **Nürnberg, 239 metres.—4.0 p.m.,** Concert from **Stuttgart. 5.15,** English Lesson. **5.55,** Talk: The Mystics. **5.55,** Time, Weather, and Agricultural Notes. **6.5,** Talk: How to be Healthy and to remain so. **6.25,** Orchestral Concert, conducted by Erich Kloss; Soloist: Gerty Stoerk (Soprano); Overture, The Caliph of Bagdad (Boieldieu); Ballet Music from Undine (Lortzing); Shadow Dance from Dinorah (Meyerbeer); Danse Bohémienne (Debussy-Artok); Mein Herr Marquis, from Die Fledermaus (Joh. Strauss); Oriental Procession (Lemans); Waltz from Schön ist die Welt (Lehar); Ein Bisschen Liebe für dich (Abraham); Harlekin und Columbine (Kaskel). **7.15** (from **Nürnberg**), Snowflakes in February—Variety Concert by a Double Vocal Quartet, Emmy Schwab (Soprano), Franz Borg (Bass), and Roberto (the Musical Miracle Man). **8.0,** Symphony Concert by the Station Orchestra, conducted by Hans Winter; Soloist: Paul Hindemith (Viola): Suite in Four Movements, Serenade (Franckenstein); Concert Music for Viola and Chamber Orchestra (Paul Hindemith); Symphony in B Flat (Haydn). **9.20,** Time, Weather, News, and Sports Notes. **9.35,** Serenade by Ludwig Wörthmüller and his Band. **11.0** (approx.), Close Down.

NAPLES.—See **Rome.**

NOTODDEN.—See **Oslo.**

OSLO

1,083 metres; 60 kW. Relayed by **Fredrikstad, 365.8 metres; Hamar, 574.7 metres; Notodden, 447.1 metres; Porsgrund, 455.2 metres;** and **Rjukan, 447.1 metres.—4.0 p.m.,** Light Music on Gramophone Records. **5.0,** German Lesson. **5.30,** Programme for Girls.

6.0, Announcements, Weather and News. 6.30, Educational Talk, relayed from the University. 7.0, Time Signal. 7.1, Wagner Concert by the Station Orchestra, conducted by Hugo Kramm: Overture, and Death of Isolde from Tristan and Isolde; Overture, Tannhäuser; Act III of Tannhäuser. 8.30, Agricultural Report. 8.40, Weather and News. 9.0, Topical Talk. 9.15, Helge Krogh Reads his own Works. 9.45, Dance Music on Gramophone Records. 11.0 (approx.), Close Down.

OSTERSUND.—See **Stockholm.**

PALERMO

537.6 metres; 3 kW.—7.0 p.m., Dopolavoro Notes, Tourist Talk, Agricultural Report, and Giornale Radio. 7.20, Variety Music on Gramophone Records. In the interval at 7.30, Time and Announcements. 7.45, Concert. Part One.—Classical Music: Sarabande, Gigue, and Badinerie (Corelli); Quintet (Schumann); Scènes pittoresques (Massenet); Talk; Quartet for Oboe, Violin, Viola, and 'Cello (Mozart); Ballet Music from Rosamund (Schubert). Part Two.—Songs: Soprano Solo, Minose (Abel); Tenor Solo, Adone Vamos (Blanco); Sotto il cielo dell'Avana (Ruccione); Humorous Item; Era nata a Chicago (Firpo); Soprano Solo, Niente (Mascheroni); Tenor Solo, Amor di re (Petrini); Song (Abraham); Humorous Item, Cecco Cicco (Restelli). 9.55, News Bulletin.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW.—Time Signals (on 2,650 metres) at 9.26 a.m. and 10.26 p.m. (Preliminary and 6-dot Signals). 5.45 p.m., Le Journal Parlé. 7.20, Weather Report. 7.30, Recitations. 7.45, Programme for Young People. 8.15, News Bulletin. 8.20, Concert, conducted by Edouard Flament: Dans les champs (Brusselmans); Chanson d'amour (de Bréville); Overture, Kosiki (Lecocq); Violin Solo, Le Gai Postillon (Flament); Selection from White Horse Inn (Benatzky-Stolz); Overture, The Bohemian Girl (Balfe). 9.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—6.45 p.m., Journal Parlé. 7.0, Gramophone Concert of Popular Music. 8.0, Tourist Report. 8.15, Interval. 8.30, Sponsored Concert. 9.0, Interval. 9.10, Instrumental and Vocal Concert. 10.10, Dance Music by the Lido Orchestra. 11.0, News.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW. 6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Probable Relay of the Test Match from Australia. 8.0, Press Review and Weather. 8.30, Test Match Relay (contd.). 12 Noon, Talk: Modern Education and Physical Culture. 12.15 p.m., Concert by the Radio Paris Orchestra: Selection from La Jolie Persane (Lecocq). 12.30, Organ Recital by G. Desserre, relayed from the Gaumont Palace: Overture, Martha (Flotow); I beg your pardon, Mademoiselle (Hoffmann); Selection from Mirella (Gounod); Waltz (Siede). 1.0, Exchange, News, and Weather. 1.5, Orchestral Concert (contd.): Selection from The Arcadians (Monckton-Talbot); Selection from Gladys (Puget); Selection from Die geschiedene Frau (Fall); Selection from the Gramophone Princess (Nelson); Selection from Blue Beard (Offenbach). In the interval at 1.30, Exchange. 2.0, Exchange. 3.45, Exchange and Market Prices. 6.10, Agricultural Talk. 6.30, Market Prices, Weather, Agricultural Report, and Exchange. 6.40, German Lesson. 7.0, Medical Talk. 7.20, Concert by the Radio Paris Orchestra: Selection from L'Ivrogne corrigé (Gluck-Chonnel); Selection from La Reine Fiammette (Leroux-Moreau); Selection from Judith (Bantock). 7.45, Commercial Prices and News. 8.0, Literary Readings. 8.30, News and Weather. 8.40, Fashion Review. 8.45, Variety Music on Gramophone Records. 9.0, Concert by the Lamoureux Concert Society, conducted by Albert Wolff, relayed from the Salle Gaveau: Fifth Symphony in C Minor (Beethoven); Iberia (Debussy); Partita for Pianoforte and Orchestra (Casella): Symphonic Suite from La Donna serpente (Casella). In the interval at 9.15, Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW. Relayed by **W8XK** on **48.86 metres** and **25.27 metres.**—9.0 p.m., Work-a-day Thoughts. 9.5, Business News. 9.15, Programme to be announced. 9.30, Weather Report. 9.32, Market Reports. 9.45, Pianoforte Interlude. 9.50, David Lawrence Dispatch. 9.55, KDKA Artist Bulletin. 9.58, Programme Announcements. 10.0, Westinghouse Chef. 10.15, Programme to be announced. 10.30, The Singing Lady. 10.45, Little Orphan Annie, from New York. 11.0, Our Daily Food by Maude and Cousin Bill, from New York. 11.15, Time Signal. 11.16, Weather Report. 11.17, Teaberry Sport Review. 11.22, Press News Reeler. 11.27, Strange Facts. 11.29, Temperature Report. 11.30, Sheer Romance. 11.45 to 3.15 a.m. (Thursday), New York Relay. 11.45, Today's News by Lowell Thomas. 12 Midnight, Amos 'n' Andy. 12.15 a.m., Carlson Robison and his Barbasol Buckaroos. 12.30, Five Star Theatre—Dramatisation of Short Stories. 1.0, Eno Crime Club. 1.30, Time Signal and Harriett Lee and her Leaders. 1.45, The Country Doctor. 2.0, Adventures of Sherlock Holmes. 2.30, Woodbury Programme with Morton Downey and Donald Novis. 3.0, D. W. Griffith's Hollywood. 3.15, Bridge School of the Air by E. Hall Downes. 3.30, Around the Cracker Barrel. 3.45, Bradley Kincaid. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.13, KDKA Artist. 4.15, Press Last Minute News Flashes. 4.20, Henry Halstead and his Californians. 5.0, College Inn Orchestra, from New York. 5.30, Time Signal and Good-night.

PORSGRUND.—See **Oslo.**

PRAGUE

488.6 metres; 120 kW.—3.10 p.m., Concert by the Station Orchestra, conducted by Isa Krejci: Overture, Iphegenia in Aulis (Gluck); Symphony in E flat (Mozart); Selection from La Boutique fantasque (Rossini-Respighi). 4.0, Talk. 4.10, Marionette Play. 5.5, Agricultural Report. 5.15, Talk for Workers. 5.25, News in German. 5.30, German Transmission: Reading and Talk for Workers. 6.0, News. 6.5, Talk: Dr. Alois Rasin. 6.20, See **Brno.** 7.0, Talk on the following Transmission. 7.5, Concert by the Czech Philharmonic Orchestra, conducted by Professor F. Stupka. Soloist: Julie Nessy-Bacherova (Songs); Symphony in E Flat, Op. 18, No. 1 (Bach); Song, Ma che vi fece o stello (Mozart); Poem, Op. 4 (Schönberg); Song Cycle (Foerster): Summer Concerto (Pizzetti). In the interval at 8.0, Time Signal. 9.0, Time Signal. 9.1, News Bulletin. 9.15 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres, 25 kW.; **LAUSANNE, 680 metres;** and **GENEVA, 760 metres.**—5.0 p.m. (from **Geneva**), Programme for Children. 6.0 (from **Lausanne**), Weather, News, and Announcements. 6.30 (from **Lausanne**), Agricultural Talk. 7.0 (from **Lausanne**), Orchestral Concert, relayed from the Métropole Bel-Air. 7.30 (from **Lausanne**), An Evening in the Village—Concert by a Mixed Choir and a Village Orchestra; Soloist, Marcel Crot (Baritone). 9.0, News Bulletin and Weather Forecast. 9.10 (from **Geneva**), Talk: The Work of the League of Nations. 9.20 (from **Lausanne**), Dance Music, relayed from the Bel-Air Métropole. 10.0 (approx.), Close Down.

RJUKAN.—See **Oslo.**

ROME

Call 1RO, 441 metres; 50 kW. Relayed by **Naples, 319 metres;** and **2RO, 25.4 metres.**—7.0 a.m., Gymnastics. 7.15 to 7.30, Giornale Radio and Announcements. 11.30, Weather and Light Music on Gramophone Records. 12 Noon, Time and Announcements. 12.2 to 1.15, Orchestral Concert of Light Music. In the interval from 12.30 to 12.45, Giornale Radio and Exchange. 3.45, Children's Radio Review. 4.10, Announcements. 4.15, Exchange and Giornale Radio. 4.30, Vocal and Instrumental Concert: Ginevra Bruno (Harp) and Maria Senes (Soprano); Harp Solos: (a) Villanella, from the Old Airs, for Lute (Respighi), (b) Waltz (Brahms); Songs: (a) A la orilla de un palmar (Ponce), (b) Elegy (Granados), (c) Aria from Lodeletta (Mascagni); Harp Solos: (a) Melody (Grieg), (b) Malaguena (Albeniz); Cavatina, from Anne Boleyn (Donizetti). 5.15 to 7.45, Interval. 7.45, Relay of an Opera. In the intervals, Talk, Announcements, and News.

SALZBURG.—See **Vienna.**

SCHENECTADY

GENERAL ELECTRIC COMPANY, WGY, 379.5 metres; 50 kW. Relayed at intervals by **W2XAF** on **31.48 metres** and by **W2XAD** on **19.56 metres.**—7.30 p.m. to 12.15 a.m. (Thursday), New York, relay. 7.30, Westminster Choir. 8.0, Two Seats in the Balcony. 12 Midnight, Jane Froman and her Orchestra. 12.15 a.m., Stock Reports. 12.30 to 2.0, New York Relay. 12.30, Ralph Kirbery (Baritone). 12.45, The Goldbergs. 1.0, The Royal Vagabonds. 1.30, The Shadow. 2.0, Musical Programme. 2.15, Three Shades of Blue (Male Trio). 2.30, Supper Club Orchestra and Programme Résumé.

SCHWEIZERISCHER LANDESSENDER

BEROMUNSTER, 459 metres; 60 kW.; and **BASLE, 244.1 metres;** and **BERNE, 245.9 metres.**—11.28 a.m., Time Signal from Neuchâtel Observatory. 11.30, Weather and News. 11.40, Le Carneval des Animaux—Suite (Saint-Saëns), on Gramophone Records. 12.15 p.m., Caruso Songs on Gramophone Records. 12.30, Intermezzo from L'Amico Fritz (Mascagni), on Gramophone Records. 12.35, Weather and Exchange. 12.45 to 2.30, Interval. 2.30, Chamber Music on Gramophone Records. 3.0, Viennese Waltzes on Gramophone Records. 3.30 (from **Berne**), Programme for Children. 4.0, Spring Music on Gramophone Records. 4.30, Weather. 4.35 to 5.30, Interval. 5.30 (from **Zürich**), Hans von Hülsen reads from his Novel, Ein Haus der Dämonen. 6.0, Time, Weather, and Market Prices. 6.15 (from **Zürich**), English Lesson. 6.45, Concert by the Radio Orchestra. 7.0 (from **Berne**), Songs from Thieck's Magelone (Brahms); Lucia Corridori (Soprano), Karl Theo Wagner (Baritone), Cecile Faesy (Recitation), Maria Peyer at the Pianoforte. 8.15, Orchestral Music. 8.30, Weather and News. 8.40 (from **Berne**), Folk Music of Ticino by Mandoline; Orchestra and Choir. 9.15 (approx.), Close Down.

SOTTENS.—See **Radio-Suisse Romande.**

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by **Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,348 metres; Ostersund, 770 metres;** and **Sundsvall, 542 metres.**—4.5 p.m., Organ Recital: Elegy (Sibelius); Moment Musical (Schubert); Melody (Deuza); Tango, Francesca (Velazco); Bells across the Meadow (Ketelbey); Foxtrot, Tickling the Tibias (Velazco); Foxtrot, Pardon me, pretty Baby (Rose). 4.30 (from **Boden**), Talk on Wolf and Bear Hunting. 5.0, Light Music on Gramophone Records. 6.0, The Inquisitive Microphone. 6.15, Weather and News. 6.30, The Ghost Story—One-Act Comedy (Booth Tarkington). 7.0, Cabaret Programme. 7.30, Talk. 8.0 (from **Göteborg**), Symphony No. 2 in D (Brahms). 8.45, Weather and News. 9.0, Dance Music by the Enders Orchestra, relayed from the Bern Hall. 10.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert of Light Music. 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Orchestral Concert, conducted by Maurice de Villers: Overture, Rienzi (Wagner); Three Pieces (Pierné); Ballet Suite, La Féria (Lacôme); Selection from La Bohème (Puccini); Polovtsian March (Borodin). 2.0 to 4.45, Interval. 4.45, Talk in French on Electricity. 5.0, Orchestral Concert, conducted by M. Roskam: Overture, Fra Diavolo (Auber); Waltz, Pourquoi ne plus m'aimer (Barbirolli); Minuet (Boccherini); Selection from Faust (Gounod); Czardas (Ackermans); Dance Suite (Pierné); Sérénade à l'amour (Fanchey); Selection from Flup (Szulc). 6.0, Variety Concert by the Station Trio, relayed from **Lille (265.4 metres).** 7.0, Variety Music on Gramophone Records. 7.15, Legal Talk in French. 7.30, Time and News. 7.45, See **Paris (Eiffel Tower).** 8.15, Lottery Results. 8.30, Concert by the Besançon Symphony Concert Society, relayed from Besançon; Conductor: Gaston Poulet; Soloist: Vuesbat (Pianoforte). 11.0, Concert, relayed from **Radio Coloniale (Paris) (25.63 metres);** Conductor: Henri Tomasi; Soloists: Roger Bourdin (Songs) and M. Vuillermoz (Horn): Suite Tessinoise (Doret); Suite, Promenoir des amants (Debussy); Mandoline (Fauré); Song; Pavane pour une Infante défunte (Ravel); Horn Solo; Trois chansons des trains et des gares (Traggi); Bourrée fantasque (Chabrier). 12 Midnight (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and **FREIBURG, 570 metres.**—12.30 p.m., Concert from **Münich.** 1.0 to 1.15, Sponsored Gramophone Records. 3.0, Programme for Children. 4.0, Concert by the Stuttgart Philharmonic Orchestra, conducted by Gustav Görlich: Overture, Die Matrosen (Flotow); Selection from The Queen of Spades (Tchaikovsky); Waltz, Wine, Woman and Song (Joh. Strauss); Potpourri of Lehár Operetta Music (Hruby); Carnival Suite (Siede); March, Bis früh um fünfe (Lincke). 5.15, Time, Weather and Agricultural Notes. 5.25, Legal Talk: The Apprentice. 5.50, Talk: A Trip of Exploration to the Kurile Islands. 6.15, Time and News. 6.20, 'Cello Recital. Beethoven Variations on the Mozart Theme, Bei Männern, welche Liebe fühlen; Scherzo (Böttersdorf); Adagio (Bach); Serenade (Casado); Malaguena (Albéniz). 7.0, Cotton No. 3 of a Radio Sequence on Industrial Sources (Josef Eberle and Karl Köstlin). 8.0, See **Frankfurt.** 8.50, The Latest Gramophone Records with Commentary. 9.5, Time, News, Weather and Programme Announcements. 9.45, See **Munich.** 11.0 (approx.), Close Down.

SUNDSVALL.—See **Stockholm.**

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—6.0 p.m., News. 6.15, La Valse (Ravel). 6.30, Songs from Sound Films. 6.45, Operetta Music: Selection from: (a) The Dollar Princess (Fall), (b) Countess Maritza (Kálmán). 7.0, Musical Programme: Idéale (Tosti), Serenade (Braga). In the interval, Talk. 7.15, Racing Results, Market Prices, and News. 7.25, Local News Bulletin. 7.30, Accordion Music. 7.45, Concert by a Viennese Orchestra. 8.15, Concert: Part I: M. Janoel in a Programme of his own Composition; Part II: Orchestral Music. 8.30, Violin Recital: Chanson triste (Tchaikovsky), Pièce en forme de Habanera (Ravel), Humoresque (Dvorak). 8.45, Operetta Music: Airs from: (a) La Périchole (Offenbach), (b) Les Cloches de Corneville (Planquette), (c) La Poupée (Audran). 9.0, Concert by the Society Les Fraters Magdol's, conducted by M. Cazeaux. In the interval, Light Music. 10.15, North African News. 10.30, Concert for Listeners in Morocco: Overture, The Caliph of Bagdad (Boieldieu); Air from Les Noces de Jeanette (Massé); Liszt Potpourri (Morena); Pour être fort (Chantrier); Estudiantina (Waldteufeld). 11.0, Music by a Symphony Orchestra. 11.15, Programme of Tangos. 11.30, Programme in English by the I.B.C.: Dance Music: What a Perfect Night for Love; O Donna Clara; Roaming through the Roses; Sunny; Cheerful little Earful; All through the Night; Them there Eyes; Sous les Toits de Paris. 12 Midnight, Weather Forecast and Announcements. 12.5 a.m. (Thursday), Military Music. 12.15, Dance Music. 12.30 (approx.), Close Down.

TRIESTE

247.7 metres; 10 kW.—4.0 to 6.30 p.m., See **Turin.** 6.30, Orchestral Concert, relayed from the Caffè Dante. 7.0 till Close Down, See **Turin.**

TRONDHEIM.—See **Oslo.**

TURIN

273.7 metres; 7 kW. Relayed by **Milan, 331.5 metres; Genoa, 312.8 metres;** and **Florence, 500.8 metres.**—4.0 to 5.0 p.m., Concert of Chamber Music: Sonata in D Minor, Op. 108, for Violin and Pianoforte (Brahms); Violin Solos: (a) Sonata in G Minor (Tartini), (b) Improvisations (Bloch), (c) La capricieuse (Elgar). 5.35, Giornale radio, Agricultural Report, and Dopolavoro Notes. 6.0, Popular Music on Gramophone Records. 6.20, Giornale Radio. 6.30, Time Signal, Announcements, Tourist Talk, and Gramophone Records (contd.). 6.35 to 7.0, Interval. 7.0, Giornale Radio and Weather Forecast. 7.15, Medical Talk. 7.30, A Comedy in Three Acts. After the Programme, Concert by the Station Orchestra. 10.0, Giornale Radio.

VATICAN CITY

19.84 metres (Morning) and **50.26 metres** (Evening); 10 kW.—10.0 to 10.15 a.m., Religious Information in Spanish. 7.0 to 7.15 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by **Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 245.9 metres;** and **Salzburg, 218.5 metres.**—3.55 p.m., Concert by The Weissgärber-Mayr Quartet; Soloists: Berta Jahn-Beer (Pianoforte) and Max Klein (Songs): Pianoforte Solo: Praeludium, Passacaglia, and Fugets (Kralik); Der tote Arbeiter (Zeisl); Schrei (Zeisl); Die Brücke (Petchnig); Song, Revelge, from Des Knaben Wunderhorn (Kienzl); Pianoforte Solos: Two Dances, Op. 42 (Wellesz); Rhapsody for Bass; String Quartet and Pianoforte; Die Heideschenke (Lenkauf), the Composer at the Pianoforte; String Quartet, Op. 35 (Kreal). 5.10, Talk: Illness caused by Over Exertion at Sport. 5.35, Talk for Workers. 6.0, Reading. 6.25, Time, Weather, and Programme Announcements. 6.35, Die Fledermaus—Operetta in Three Acts (Joh. Strauss), relayed from the Academy Theatre. 7.25, Quintet in A, Op. 114—the Trout, for Pianoforte, Violin, Viola, 'Cello, and Double Bass. 8.5, News, Weather, and Announcements. 8.20, Talk on the Austrian Musical Festival. 8.30, Dance Music by the Karl Machek Jazz Band, relayed from the Café Splendide.

WARSAW

1,411 metres; 120 kW.—10.58 a.m., Time Signal and Bugle Call from the Tower of St. Mary's Church, Cracow. 11.5, Programme Announcements. 11.10, Gramophone Records of Popular Music. 12.20 p.m., Weather Forecast. 12.25 to 2.10, Interval. 2.10, Announcements. 2.15, Economic Notes. 2.30, Boy Scouts Report. 2.35, Programme for Children. 3.0, Light Music on Gramophone Records. 3.40, Military Talk. 4.0, Talk for Music Teachers. 4.15, Announcements. 4.20, Popular Music on Gramophone Records. 4.40, Talk: Old Age Pensions for the Middle Classes. 4.55, Programme Announcements. 5.0, Dance Music from the Adria Dance Hall. In the interval, News. 6.0, Miscellaneous Items. 6.20, Answers to Agricultural Correspondence. 6.30, Talk: Literary Criticism. 6.45, Radio Journal. 7.0, Light Music, relayed from **Lwow (381 metres).** 7.50, Sports Notes. 7.55, Radio Journal. 8.0, Pianoforte Recital by Alexander Borovski: Prelude and Fugue in C Minor (Bach); Prelude and Fugue in B Flat Minor (Bach); Prelude and Fugue in C Sharp (Bach); Rondo Capriccioso (Mendelssohn); Variations on a Theme by Paganini (Brahms); Larghetto (Prokofiev); The Flight of the Bumble Bee (Rimsky-Korsakov); Preludes in G and in D Minor (Rachmaninov); Chasse-neige (Liszt); Polonaise in E (Liszt). 8.55, Song Recital from **Katowice (408 metres).** 9.20, Dance Music from the Italia Café. 9.40, Talk in English: Smoluchowski, the Polish Physician. 9.55, Aviation Weather Report and Police Notes. 10.0, Dance Music from the Bodega Dance Hall.

ZURICH.—See **Schweizerischer Landessender.**

THURSDAY

FEBRUARY THE SIXTEENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL — Orchestral concert. Mr. Desmond MacCarthy: "Drama: Elizabethan and Eighteenth-Century." Vaudeville programme. Song and violoncello recital.

LONDON REGIONAL — Concert from the University, Leeds. Zigeuner orchestral concert. Concert of Light French Music. "The Point of View" and "The Carrier Pigeon," two plays by Eden Phillpotts.

MIDLAND REGIONAL — Orchestral concert, from the Town Hall, Birmingham.

NORTH REGIONAL — Concert from the University, Leeds. Hallé Concert, relayed from the Free Trade Hall, Manchester.

WEST REGIONAL — Light music. The Annual Celebrity Concert of the Cinderford Miners' Welfare Association.

SCOTTISH REGIONAL — Orchestral concert. "Putting Scotland's House in Order." Mr. C. A. Oakley: "The Industrial Worker."

BELFAST — Light orchestral concert. Organ recital. An Irish programme. String orchestral concert.

ABROAD

COPENHAGEN — Concert by the Radio Symphony Orchestra, relayed from Odense.

HEILSBERG — Great composers of the Renaissance Period.

LEIPZIG — The Symphony Orchestra, conducted by H. Weber.

TOULOUSE — I.B.C. concert of Italian operatic and light music.

ATHLONE

413 metres; 60 kW.; and **CORK, 224.4 metres.**—**1.30 to 2.0 p.m.,** Time Signal, Weather Report, Stock Report and Light Music on Gramophone Records. **6.0,** Popular Music on Gramophone Records. **6.15,** Programme for Children. **7.0,** Light Music on Gramophone Records. **7.10,** Dublin Cattle Market Report. **7.20,** News Bulletin. **7.30,** Time Signal. **7.31,** French Lesson. **7.45,** Literary and Dramatic Talk. **8.0,** Concert of Light Opera Music by the Station Orchestra. **8.20,** Variety Programme by Tom Madden and Company. **8.50,** Pianoforte Recital by Victor Love. **9.10,** Songs by Jean Thompson. **9.20,** Violin Solos by Daphne Garratt. **9.35,** The Station Orchestra. **10.0,** Dance Music on Gramophone Records. **10.30,** Time Signal, News, Weather Report and Close Down.

BARCELONA

RADIO-BARCELONA, Call EAJ1, 348.8 metres; 8 kW.—**6.0 p.m.,** Trio Concert with Literary Interlude. **7.0,** Request Concert on Gramophone Records, and Fortnightly Report of the Institute of Hygiene. **7.30,** Exchange Quotations, Gramophone Concert (contd.), and Talk in Catalan. **8.0,** Light Music on Gramophone Records, followed by Press Review. **8.0,** Chimes, Weather, Market Prices and Exchange Quotations. **9.5,** An Opera, relayed from the Gran Teatro del Liceo. In the interval at **11.0,** News. **12 Midnight** (approx.), Close Down.

BARI

269.8 metres; 20 kW.—**7.0 p.m.,** Agricultural Notes, Tourist Talk and Dopolavero Announcements. **7.20,** Giornale Radio and Weather. **7.30,** Time Signal and Announcements. **7.35,** Popular Music on Gramophone Records. **7.45,** An Opera, relayed from the Teatro Petruzzelli. In the intervals: Art Notes and Theatre Talk. After the Opera, News Bulletin.

BASLE.—See **Schweizerischer Landessender.**

BELGRADE

430.4 metres; 2.8 kW.—**3.30 p.m.,** Recital of Yugoslav Songs. **4.0,** Talk. **5.25,** Time and Programme Announcements. **5.30,** A French Dialogue. **6.0,** Concert by the Radio Orchestra. Serbian Potpourri (Petrovic); Melodies from Serbia and Macedonia (Mokranjac); Bosnian Melody (Koch); Czech Suite (Moor); Two Dances (Friml); Waltz, A toi (Waldteufel). **7.0,** See **Berlin (Witzleben). 9.0,** News, followed by Cigány Music from the Rudnicanin Restaurant.

BERLIN

KONIGS WUSTERHAUSEN; 1,635 metres; 60 kW.—**11.55 a.m.,** Nauen Time Signal. **12.35 p.m.,** News Bulletin. **1.0,** Gramophone Concert of Russian Music, relayed from **Berlin (Witzleben). 2.0,** Musical Programme for Children. **2.30,** Weather and Exchange. **2.45,** Reading (Meta Scheele). **3.0,** Dialogue for Women. **3.30,** See **Berlin (Witzleben). 4.10,** Talk on Wireless Technique. **4.30,** Chamber Music: Two Songs for Contralto, Viola and Pianoforte (Brahms): (a) Gestillte Sehnsucht, (b) Geistliches Wiegenlied. **5.0,** Talk: Education with a View to Safeguarding Nationality. **5.30,** Music (E. T. A. Hoffmann on Gramophone Records) and Recitations. **6.0,** German Lesson for Germans. **6.30,** A Poem. **6.35,** Agricultural Talk. **6.55,** See **Hamburg. 7.40,** Concert of Light Music from the Café Berlin. **8.0,** See **Frankfurt. 9.0,** Weather, News and Sports Notes. **9.45,** Weather Report for Shipping. **10.0,** Dance Music from **Berlin (Witzleben). 11.0** (approx), Close Down.

BERLIN

WITZLEBEN, 415.9 metres; 1.5 kW.—**2.35 p.m.,** Sonata in A Flat, Op. 39, for Pianoforte (Weber). **2.55,** Schubert Song Recital by Hilde Sylvar (Soprano): Du bist die Ruh'; Lachen und Weinen; An die Nachtigall; An die Sonne; Mio ben ricordati; La Pastorella. **3.15,** From the Diary of a Doctor. **3.30,** Pianoforte Trios: Trio in E Minor, Op. 119 (Spohr); Trio in B Minor, Op. 5 (Volkmann). **4.30,** Talk: What is happening in China? **4.50,** Tales by Dr. Ueberall. **5.10,** Orchestral Concert from the Hotel Bristol. **5.30,** Herbert Eulenburg reads from his own Works. **5.55,** The Witzleben Station informs its Listerers . . . . **6.0,** Topical Talk. **6.10,** Ernst Wiechert speaks with Two Authors. **6.35,** Musical Writing—an Experimental Talk with Gramophone Records. **7.0,** Concert by the Berlin Concert Society, conducted by Clemens Schmalstich: Overture, The Cricket on the Hearth (Goldmark); Gondoliera (Ries); Intermezzo from Amor medico (Wolf-Ferrari); Waltz, Die Werber (Lanner); Carnival Suite (Schmalstich); Overture, Der Opernball (Henberger). **8.0,** An Excursion with the Microphone—Variety Programme. **9.30,** Weather, News, and Sports Notes. **9.40** (approx.), Dance Music. **11.0** (also relayed by **Zeesen** on **31.38 metres**), Behind the Scenes—at the Opera, the Winter Garden, the Cinema, and an Exhibition (Reproduction on Gramophone Records).

BERNE.—See **Schweizerischer Landessender.**

BEROMUNSTER. — See **Schweizerischer Landessender.**

BODEN.—See **Stockholm.**

BODO.—See **Oslo.**

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—**7.0 p.m.,** See **Berlin (Witzleben). 8.0,** Talk on Wine. **8.15,** News, Weather, Exchange, and Lottery, and Charades Results. **8.30,** Denis—Comedy in Three Acts (Alexandra Dumas, Fils.).

BRATISLAVA

279 metres; 14 kW.—**4.50 p.m.,** Balalaika Recital. Concert Mazurka (Wieniawski); Song of the Volga Boatmen (arr. Chaliapine and Koenemann); Two Russian Folk Songs; Humoresque (Dvorák); Melody (Artiemovski). **5.20,** Talk for Boy Scouts. **5.35,** Popular Music on Gramophone Records. **6.0,** See **Prague. 6.5,** Literary Review. **6.25** till Close Down, See **Prague. 10.0** (approx.), Close Down.

BREMEN.—See **Hamburg.**

BRESLAU

325 metres; 60 kW.; and **GLEIWITZ, 253 metres.**—**12.10 p.m.,** Weather for Farmers. **12.15,** Concert by the Silesian Philharmonic Orchestra, conducted by Hermann Behr: Overture, Das Nachtlager von Granada (Kreutzer); Waltz, Donauweibchen (Joh. Strauss); Selection from Boccaccio (Suppé); Gallop, Grosstädtisch (Ziehrer). **12.45,** Time, Weather, News, and Exchange Quotations. **1.5,** Gramophone Concert: Overture, Light Cavalry (Suppé); Polka-Mazurka, Die schöne Polin (Millöcker); Song from Paganini (Lehár); Waltz from A Waltz Dream (O. Straus); Selection from The Count of Luxembourg (Lehár); Trara, die Garde ist da (O. Straus); Potpourri, Sie hören jetzt (Dostal). **1.45,** Sponsored Programme, with Gramophone Records. **2.10,** Agricultural Prices. **2.40,** Talk: The Week-end. **2.50,** Book Review. **3.10,** Chamber Music for Viola and Pianoforte: Concert Sonata (Veracini); Sonata (Nardini). **3.40,** Light Music on Gramophone Records. **4.0,** Thé Dansant, from the Haus Oberschlesien Gleiwitz. **4.50,** Agricultural Prices and Topical Report for Children. **5.0,** Talk: Science and a Sense of Value. **5.20,** Topical Report. **5.35,** Talk for Workers. **6.0,** Talk: Richard Wagner and Women. **6.30,** Weather for Farmers. **6.32,** Concert from **Leipzig. 7.0,** Die Mädchenballade—Lyric Play (Anton Schmack), with Music by Edmund Nick, the Composer conducting. **7.45,** News. **7.55,** Concert of Request Music by the Station Orchestra, conducted by Franz Marszalek. Soloist, Bruno Jagielski (Tenor). **9.10,** Time, Weather, News, Sports Notes and Programme Announcements. **9.30,** Talk in Esperanto. **9.40,** Talk: The Norwegian Fjords. **10.0** (approx.), Close Down.

BRNO

342 metres; 35 kW.—**3.10 p.m.,** Concert by the Station Orchestra, conducted by Janeta. Overture, Wanda (Dvorák); Suite, Children's Corner (Debussy); Serenade for Strings (Tchaikovsky). **4.10,** News for Young People. **4.20,** See **Prague. 4.50,** Talk: Sports. **5.0,** Literary Talk. **5.15,** See **Prague. 5.25,** German Transmission: News, Social Talk, and Talk: Nobel Prize Winners of 1933. **6.0,** See **Prague. 10.0** (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R.; 509 metres; 15 kW.—**12 Noon,** Orchestral Concert, conducted by M. Leemans: Festival Overture (Leutner); Meditation (Glazunov); Dance (Debussy); Selection from Thais (Massenet); Allegro for Violin (Fiocco); Serenata (Malats); Procession of the Dervishes (Siede); Waltz, A Little Spanish Villa by the Sea (Rose-Conrad); Selection from The Student Prince (Romberg). **1.0 p.m.,** Le Journal Parlé. **1.10,** Gramophone Concert: Entr'acte from The Third Act of Lakmé (Delibes); Rondo (Boccherini-Bazelaire); Aria from The Fair Maid of Perth (Bizet); Selection from Aïda (Verdi); Ma Normandie (Bérat); Le Cygne (Saint-Saëns); Selection from The Tales of Hoffmann (Offenbach); Tango, Ternuras (Agüila); Blues, Saxophone Marmalade; Tango, Engrupido (Pagnoul); Pasodoble, Glorias de España (Ferrete). **5.0,** Concert of Ketelbey Music by the Radio Orchestra, conducted by M. Charles Walpot: Overture, Chal Romano; The Sacred Hour; The Naiads; The Phantom Melody; In a Fairy Realm. **5.30.** Programme for Children. **6.0,** Talk on Cookery. **6.15,** Gramophone Concert: Wallenstein's Camp (d'Indy), conducted by the Composer; Concert Waltz (Glazunov); Duet from Le Châlet (Adam); 'Cello Solo, Spanish Serenade (Glazunov); Romance from Les Noces de Jeanette (Massé); Melody from Le Grand Mogol (Audran); Souvenir (Drdla); Accordion Music and Sketches. **7.15,** Review for Workers. **7.30,** Wireless Review. **8.0,** Grieg Concert by the Symphony Orchestra, conducted by M. Meulemans. Soloist, Mme. Broquet (Pianoforte). Norwegian Dances; Concerto for Pianoforte and Orchestra; Symphonic Dances. **8.45,** Talk. **9.0,** Concert by the Radio Orchestra, conducted by M. Charles Walpot: Foxtrot, Carmen (Nico Dostal); Wellenspiele (Robrecht); Badinage (d'Agiéves); Russian Dance, Gopak (Bullerian); Selection from Miss Decima (Audran); Rendez-vous (Fischer); The Phantom Patrol (Ackermans); Scherzetto (Demaret); Chanson de Mai (Dupuis); The Forge in the Forest (Lilenberg); Marche bohémienne (Filipucci). **10.0,** Le Journal Parlé. **10.10,** Gramophone Concert. Part I, Dances: Quadrille from Orpheus in the Underworld (Offenbach); Hofballtänze (Lanner); Tango (Stolz); Pasodoble (Holländer). Part II: The Fire Bird—Ballet (Stravinsky), conducted by the Composer. **11.0** (approx.), Close Down.

BRUSSELS (No. 2)

N.I.R.; 338.2 metres; 15 kW. Programme in Flemish.—**12 Noon,** Popular Music on Gramophone Records. **1.0 p.m.,** Le Journal Parlé. **1.10,** Concert by the Small Station Orchestra, conducted by Pierre Leemans: Pasodoble, Ti voglio bene (Mariotti); Introduction and Humoresque for Violin (d'Ambrosio); Romance (Löhr); Selection from The Czarevitch (Lehár); Capriccio for Pianoforte (Benoit); Sérénade à Graziella (Desprez); Tango, L'Edera (Mendes-Schor); Selection from Die Puppenfee (Bayer). **5.0,** Concert by the Symphony Orchestra, conducted by M. Meulemans: Overture, The Barber of Seville (Rossini); Carnaval Figure (Luigini); Selection from Joli Gilles (Poise); (a) Overture, (b) Entr'acte, and (c) Pas des Pierrots et Pierrettes; Spanish Serenade (Glazunov); Ballet Music from Sylvia (Delibes); Waltz, Unter den Linden (Joh. Strauss). **6.0,** Light Music on Gramophone Records. **7.15,** Talk: Oysters and Mussels. **7.30,** Talk for Women. **8.0,** Concert, relayed from **Berlin (Witzleben).** In the interval, Reading. **9.15,** Part Relay of The Twilight of the Gods—Opera (Wagner), from the Royal Flemish Opera House, Antwerp, followed by Le Journal Parlé, and Light Music on Gramophone Records. **11.0** (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—**4.0 p.m.,** Orchestral Concert. **5.0,** News and Time. **5.10,** Talk. **5.25,** Orchestral Concert. **6.0,** Talk on Romania. **6.30,** Relay of an Opera. In the intervals, News.

BUDAPEST

550 metres; 18.5 kW. Also relayed on **840 metres** from **5.30 to 11 p.m.**—**4.30 p.m.,** Popular Music on Gramophone Records. **5.0,** Programme by Jenö Chalmoky. **5.30,** Concert by a Cigány Band. **6.30,** Report from a Film Studio. **7.0,** See **Berlin (Witzleben). 9.0,** News, Time and Weather. **9.15,** Concert by the Opera House Orchestra, conducted by Ernst Dohnanyi. Soloist: Andreas Gertler (Violin). Overture, The Italian Girl in Algiers (Rossini); Violin Concerto (Lalo); Overture, Scherzo, Nocturne and Wedding March from A Midsummer Night's Dream (Mendelssohn). **10.30,** Dance Music from the Hotel Bellevue. **11.0** (approx.), Close Down.

CASSEL.—See **Frankfurt.**

COPENHAGEN

281 metres; 0.75 kW.; and **KALUNDBORG, 1,153 metres;** 7.5 kW.—**11.0 a.m.,** Time Signal and Chimes from the Town Hall. **11.2,** Concert by the Max Skalka String Ensemble, relayed from the Hotel d'Angleterre. **1.0 to 1.40,** Interval. **1.40,** Concert by the Radio Wind Instrument Orchestra, conducted by Launy Gröndahl. Soloist: Inge Rützau (Pianoforte). March (Allin); Overture, Flotte Bursche (Suppé); Waltz, Verschmähte Liebe (Lincke); Aria from Macbeth (Weyse); Amalie Polka (Jensen); Selection from Rigoletto (Verdi); Pianoforte Solos: (a) Intermezzo in B Flat Minor (Brahms), (b) Nocturne in E (Chopin), (c) Liebestraum No. 3 in A Flat (Liszt), (d) Clair de lune (Debussy); March-Suite, March of the Pan-Americans (arr. Sousa); Festival Overture (Holm); Norwegian Mazurka (Johs. Nielsen); Evensong (Stockmar); Fantasia on Danish Sailors' Songs; Copenhagen March (Poulsen). **3.40,** Programme for Boys. **4.40,** Exchange and Fish Market Prices. **4.50,** Talk: Sick Nursing at Home. **5.20,** English Lesson. **5.50,** Weather. **6.0,** News. **6.15,** Time. **6.45,** Danish Lesson. **7.0,** Time Signal from the Town Hall. **7.5,** Concert by the Radio Symphony Orchestra, relayed from Odense. Conductor: Egisto Tango. Soloists: Viorica Tango and Enzo de Muro Lomanto (Songs); Overture, Sicilian Vespers (Verdi); Aria, Una furtiva lagrima from L'elisir d'amore (Donizetti); Ballet Suite for Orchestra (Lully-Mottl); Ave Maria from Othello (Verdi); Aria from L'amico Fritz (Mascagni); Overture, The Barber of Seville (Rossini); Aria from Manon (Massenet); Leonora's Aria from Il Trovatore (Verdi); Andante (Geminiani); Recitative and Aria from Faust (Gounod); Aria, La donna é mobile, from Rigoletto (Verdi); Hymn to the Sun from Iris (Mascagni). **9.10,** News. **9.25,** Reading. **9.45,** Dance Music by the Teddy Petersen Band, relayed from the Wivex Restaurant. In the interval at **11.0,** Time and Chimes from the Town Hall. **11.30** (approx.), Close Down.

CORK.—See **Athlone.**

CRACOW

312.8 metres; 1.5 kW.—**3.25 p.m.,** See **Warsaw. 4.0,** Popular Music on Gramophone Records. **4.40,** See **Warsaw. 6.0,** Answers to Correspondents. **6.15,** Miscellaneous Items and Announcements. **6.30 to 8.30,** See **Warsaw. 8.30,** A Radio Play, after Birabeau's Comedy Orange Blossom. **9.15,** See **Lwów. 9.55,** See **Warsaw. 10.0,** Light Music and Dance Music from the Pavilon Restaurant. **11.0,** Bugle Call from the Tower of St. Mary's Church.

DANZIG.—See **Heilsberg.**

DRESDEN.—See **Leipzig.**

DUBLIN.—See **Athlone.**

FECAMP

223 metres; 10 kW.—6.0 to 7.0 p.m., Programme in English by the I.B.C. Announcers: C. Danvers Walker, R. Chene and B. McNab. **6.0,** Military Band Concert for

Brighton Listeners: Carry On (Dundas); Cupid's Army (Silvier); The Mad Major (Alford); The Elephant March (Ord Hume); Way Down South (Myddleton); The Whistler and his Dog (Pryor); In the Sudan (Sebek); The Middy March (Alford). **6.30,** Concert for Hove Listeners: Song and Pianoforte Recital. Pianoforte Solo: Whoopee Medley (Kahn); Songs: (a) When I met Sally at the Seaside (Tilsey), (b) I miss a little Missy (Coots), (c) You used to be my Sweetheart (Towers), (d) Gone, going, gone (Evans), (e) They all make love but me (Damarell), (f) You don't have to tell me (Donaldson); Pianoforte Solo: Monte Carlo Medley (Robin). **8.10,** Programme to be announced. **10.0** till Close Down. Programme in English by the I.B.C.. **10.0,** Dance Music. **11.0,** Orchestral Music: Maurice Chevalier Medley; Sons les toits de Paris (Moretti); When the Lilac blooms again (Rotter); In the Night (Tate); My Sunshine is you (Stolz); Happy days and lonely Nights (Fisher); Good-night Sweetheart (Noble). **11.30,** Plantation Songs: Bye and Bye; I got a Robe; O dem Golden Slippers (Bland); Go down Moses; Deep River; Poor Old Joe (Foster); Nobody knows de Trouble I've seen; Every time I feel de Spirit; River stay 'way from my Door (Woods). **12 midnight,** Music Hall Sketches: The Plumber's Mate; Duet, Getting a Job; Doon the Watter; Duet, Getting the Sack; Days of the Dugouts. **12.30 a.m. (Friday),** Songs: Ain't it great to be Home again (Gilbert); Cheer up and smile (Conrad); Silvery Moon (de Frank); Here comes Emily Brown (Conrad); I'm feathering a Nest (Milton); Every little Girl he sees (Akst); This is Heaven (Akst); Nobody cares if I'm Blue (Clarke). **1.0,** Organ Solos: The Kiss Waltz (Dubin); It happened in Monterey (Wayne); Stein Song (Vallet); Moonfight reminds me of you (Kahn); Roses of Yesterday (Berlin); Ah, Sweet Mystery of Life (Herbert); Rhapsody in Blue (Gershwin). **1.30,** Songs: I'm in the Seventh Heaven (de Sylva); Wishing and waiting for love (Clarke); Little Pal (Henderson); Am I blue? (Akst); Just Plain Folk (Gilbert); Sleep, Baby, sleep (Tucker); The Heart of the Sunset (Nicholls); Take your to-morrow (Razag). **2.0,** Dance Music. **2.57,** I.B.C. Good-night Melody. **3.0** (approx.), Close Down.

FLENSBURG.—See **Hamburg.**

FLORENCE.—See **Turin.**

FRANKFURT

259 metres; 17 kW.; and **CASSEL, 245.9 metres.—2.30 p.m.,** Programme for Children. **3.30 to 3.50,** Interval. **3.50,** Economic Notes. **4.0,** See **Stuttgart. 5.15,** Economic Notes. **5.25,** Topical Talk. **5.50,** A Discussion on Indian Trade. **6.15,** Time, Programme Announcements, Weather, and Economic Notes. **6.20,** Talk; News from Other Lands. **6.30,** Orchestral Concert, conducted by Reinhold Merten. Soloist, Margarete Cossa (Soprano). Overture, I Capuletti ed i Montecchi (Bellini); Ma la sola ahimè Son io, from Beatrice di Tenda (Bellini); Overture, Don Pasquale (Donizetti); Havvi un Dio, from Maria di Rohan (Danizetti); Overture, The Siege of Corinth (Rossini); Selva opaca, from William Tell (Rossini); Overture, The Tzar's Bride (Rimsky-Korsakov); Senza mamma o bimbo, from Suor Angelica (Puccini); Overture, Djamileh (Bizet); La mamma morta, from André Chénier (Giordano); Preludes to the Second and Third Acts of Louise (Charpentier); Song from Hérodiade (Massenet); Overture, La Maschere (Mascagni). **8.0,** Programme dedicated to Marburg. **9.0,** Suite, Op. 29, for Clarinets, Violin, Viola, 'Cello, and Pianoforte (Schönberg). **9.30,** Time, News, Weather, and Sports Notes.

FREDRIKSSTAD.—See **Oslo.**

FREIBURG.—See **Stuttgart.**

GENEVA.—See **Radio-Suisse Romande.**

GENOA.—See **Turin.**

GLEIWITZ.—See **Breslau.**

GOTEBORG.—See **Stockholm.**

GRAZ.—See **Vienna.**

HAMAR.—See **Oslo.**

HAMBURG

Call ha (in Morse), 372 metres; 1.5 kW. Relayed by **Bremen, 269.8 metres; Flensburg, 227.4 metres; Hanover, 566 metres,** and **Kiel, 232.2 metres.—6.0 p.m.,** Medical Talk: Whooping-Cough. **6.25,** Weather Report. **6.30,** Talk: The Theatre and the Critic. **6.55,** Friedrich Wöhler—Play in Three Scenes (Hans Schimank). **7.40,** Tchaikovsky Concert: The Hamburg Philharmonic Orchestra, conducted by José Eibenschütz. Soloist: Marianne Krasmann (Pianoforte). Symphony No. 6, Op. 74 (the Pathetic); Concerto in B flat Minor, Op. 23, for Pianoforte and Orchestra. **9.10,** Time and News. **9.30,** Topical Talk. **9.40,** Dance Music. In the interval at **10.20,** Ice Report.

HANOVER.—See **Hamburg.**

HEILSBERG

276.5 metres; 60 kW.; and **DANZIG, 453.2 metres.—12.5 to 1.30 p.m.,** Gramophone Concert of Popular Music. In the interval at **12.20,** News. **2.0,** Exchange and Market Prices. **3.0,** Talk for Young People. **3.30** (from **Danzig**), Concert by the Danzig Municipal Theatre Orchestra, conducted by Otto Selberg: Overture, The Kiss (Smetana); Concert Fantasia, Mozartiana (Kling); Rustle of Spring (Sinding); Overture, Phèdre (Massenet); Prelude and Waltz, Op. 7 (Chopin); Potpourri, Wiener Volksmusik (Komzak); Entry March from The Gipsy Baron (Joh. Strauss). **4.55,** Review of Books. **5.15,** Market Prices. **5.20,** Ice Report. **5.30,** Agricultural Talk. **6.0,** Songs of Soldiers, Waggoners and Mercenaries, for Baritone, with Lute and Violin. **6.30,** Elementary English Lesson. **6.55,** Weather and News. **7.0,** See **Breslau. 7.45,** Great Composers of the Renaissance Period—Concert by the Wireless Choir, conducted by Ludwig Leschetizky. Soloist: Margarethe Schuchmann (Harpsichord). Ave Maria—for Five Part a-Cappela Choir (Josquin de Près); Toccata for Harpsichord (Girlamo Frescobaldi); Madrigal and Canzonetta for Women's Choir (Giovanni Pierluigi Palestrina); Ascendit Deus—for Five Part Choir (Clemens non Papa); Canzone for Harpsichord (G. Gabrieli); Humorous Piece for a Cappella Choir (Clement Jannequin-Claude le Jeune). **8.30,** Talk on Victor von Scheffel, on the One Hundred and Seventh Anniversary of his Birth. **9.10** (approx.), Weather, News and Sports Notes.

HILVERSUM

(Announced **HUIZEN), 296.1 metres;** 20 kW. (7 kW. up to **4.40 p.m.).—11.55 a.m. to 1.40 p.m.,** Programme of the Catholic Radio Society (K.R.O.): Concert by the K.R.O. Orchestra, conducted by J. Gerritsen. **1.40** till Close Down, Programme of the Christian Radio Society (N.C.R.V.). **1.40,** Handicrafts Lesson. **2.40,** Programme for Women. **3.10 to 3.40,** Interval. **3.40,** Bible Reading and Sacred Music for Organ and Soprano. **4.40,** Violin Recital by H. v. Vegt: Sonata in G Minor (Tartini); Chanson Louis XIII and Pavane (Couperin-Kreisler); Scherzo (Dittersdorf-Kreisler); Sicilienne and Rigaudon (Francoeur-Kreisler); Gramophone Records; La Gitana (Kreisler); Caprice viennois (Kreisler); Slav Dance in E Minor (Dvorák-Kreisler); Slav Dance in G Minor (Dvorák). **5.25,** Handwork Lesson for Children. **5.55,** Talk. **6.25,** Dressmaking Lesson. **6.40,** Weekly Review. **7.10,** Police Notes. **7.25,** Religious Report. **7.40,** Concert by the Excelsior Mixed Choir, conducted by W. Mizée, relayed from **Leimuiden. 8.40,** Talk for Parents. **9.10,** Organ Recital by H. Bos: Prelude in E Minor (Bach); Pastorale in F (Bach); Andante from the Concerto in F, Op. 4, No. 4 (Handel); Schmücke dich, o liebe Seele (Brahms); O Welt ich muss dich lassen (Brahms); Invocation, Op. 18, No. 3 (Guilmant); Grand Choral, Op. 18, No. 1 (Guilmant); Gothic Suite, Op. 25 (Boëllmann). **10.10,** News. **10.20,** Popular Music on Gramophone Records. **11.10** (approx.), Close Down.

HORBY.—See **Stockholm.**

HUIZEN

Announced **HILVERSUM, 1,875 metres;** 8.5 kW.—Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.). **11.10 a.m.,** Concert by the Small Wireless Orchestra, conducted by Nico Treep: Festival Overture (Kalliwoda); From Gluck to Wagner (Schreiner); Waltz, Strauss-Federn (Morena); Waltz, Dolores (Waldteufel); In a Monastery Garden (Ketelbey); Champagne Galop (Lumbye). **11.35,** Light Music on Gramophone Records. **12.10.** Concert (contd.): Minuetenspiele (Fetras); La Czarine (Ganne); Sabit d'amour (Elgar); Ein Roschochzeit-zug (Lessel); Mit Standarten (v. Blon). **12.40,** Popular Music on Gramophone Records. **12.55 p.m.,** Concert (contd.): Selection from Die Fledermaus (Joh. Strauss); Der alte Brummbär (Fucik); Canzonetta and Minuet (Boccherini); The Marriage of the Winds (Hall); Im Prater blühen wieder die Bäume (Stolz); March Hallo Europe! (Blech). **1.40,** Talk for Women. **2.10,** Interval. **2.25,** Popular Music on Gramophone Records. **2.40,** Talk. **3.25,** Light Music on Gramophone Records. **3.40,** Talk. **4.10,** Concert by the Wireless Chamber Orchestra, conducted by Nico Gerhard: Drachselmarsch (Fucik); Overture, Chal Romano (Ketelbey); Orientzauber (Dicker); Selection from The Three Musketeers (Friml-Jones). **4.40,** Programme for Children. **5.10,** Orchestral Concert (contd.): March of the Giants (Finck); Overture, Im Reiche des Indra (Fiotow); Hungarian Dances Nos. 2 and 4 (Brahms); Melody (Fucik); Glowworm Idyll (Lincke); Amina (Lincke); The Caravan (Rey); Selection from The Count of Luxembourg (Lehar). **6.10,** Sports Notes. **6.40,** Orchestral Concert (contd.): Eternal Spring (Popy); La Lettre de Manon (Gillet); Le Réponse à Manon (Gillet); Selection from La fille de Madame Angot (Lecocq); Return to France (Ganne). **7.10,** English Lesson. **7.40,** Time. **7.41,** News. **7.45,** Light Music on Gramophone Records. **7.55,** Wagner Concert, relayed from the Concertgebouw, Amsterdam. Conductor: Erich Kleigen. Soloist: Alexander Kipnis (Songs). Prelude and Death of Isolda from Tristan and Isolda; Forest Murmurs from Siegfried; Farewell from The Valkyries; Selection from The Mastersingers. In the interval, Radio Play. **9.55,** Radio Play. **10.10,** Concert of Light Music by the Kovacs Lajos Orchestra. Soloists: Hilde Jager and Bob Schulte (Songs). **10.40,** News. **10.45,** Light Music on Gramophone Records. **10.55,** Concert of Light Music (contd.). **11.40** (approx.), Close Down.

INNSBRUCK.—See **Vienna.**

KALUNDBORG.—See **Copenhagen.**

KATOWICE

408 metres; 16 kW.—**2.50 p.m.,** Popular Music on Gramophone Records. **3.25,** See **Warsaw. 4.0,** Orchestral Concert of Popular Music. **4.40,** See **Warsaw. 6.0,** Sports Talk. **6.15,** Announcements and Light Music on Gramophone Records. **6.25,** Report for Boy Scouts. **6.30** till Close Down, See **Warsaw.**

KAUNAS

1,935 metres; 7 kW.—Programme in Celebration of the Fifteenth Anniversary of the Establishment of the Lithuanian Republic. **5.20 p.m.,** Lithuanian Concert by the Radio Orchestra. **6.0,** Address. **6.30,** Grazina—Opera (Karnavicius). In the intervals, Talks in German, French, English, Polish and Esperanto.

KIEL.—See **Hamburg.**

KLAGENFURT.—See **Vienna.**

KOSICE.—See **Prague.**

LAHTI

1,796 metres; 10 kW., and **HELSINKI, 368.1 metres. 5.40 p.m.,** Song Recital by Hannes Kettunen. **6.5,** Talk. **6.30,** News in Finnish and Swedish. **6.45,** Talk: Electric Musical Instruments. **7.0,** See **Berlin (Witzleben). 10.0** (approx.), Close Down.

LANGENBERG

473 metres; 60 kW.—**12 Noon,** Concert by the Station Orchestra, conducted by Kühn. Soloist: Josef Schömmer (Tenor): Overture, Die Abreise (d'Albert); Melody from Tiefland (d'Albert); Ballet Music from The Merry Wives of Windsor (Nicolai); Symphonic Poem, The Moldau (Smetana); Morgen (R. Strauss); Das Rosenband (R. Strauss); Waltz from Der Rosenkavalier (R. Strauss). In the interval at **1.0 p.m.,** News. **1.30,** Sponsored Programme with Gramophone Records. **2.30,** Economic Notes and Time. **2.50,** Programme for Children. **3.20,** Notes on the Broadcasts for Schools. **3.30,** Educational Talk. **4.0,** Concert of Viennese Operetta Music conducted by Eysoldt. Der Zauber der Montur from Die Landstreicher (Ziehrer); Overture, Wiener Frauen (Lehár); Und der Himmel hängt voller Geigen from Der liebe Augustin (Falk); Piccolo from A Waltz Dream (O. Straus); Süsse Mäd'ln from Das süsse Mädel (Reinhardt); Fantasia on Jos. Strauss' Frühlingsluft (Reiterer); Du sollst der Kaiser meiner Seele sein from Der Favorit (Stolz); Vilja's Song from The Merry Widow (Lehár); Selection from Der Bettelstudent (Millöcker). **5.20,** French Conversation. **5.45,** Weather, Time, Economic Notes, and Sports Results. **6.0,** Talk: The History of the German Language. **6.20,** Topical Talk. **6.30,** Talk: Mining in the Ruhr District. **6.55,** News. **7.0,** German Mass, Op. 43 (Georg Nellius), relayed from the Volkshalle, Neheim, by the Neheim Choral Society, conducted by Georg Nellius. **7.40** (from **Neheim),** Concert of Folk Music. The Klempt Vocal Trio, the Neheim Choral Society, conducted by G. Nellius, the Westphalian Peasant Choir and Orchestra, the Small Orchestra, conducted by Arthur Wolf, and Paul Schröder (Songs to the Lute): Austrian Peasant Dances (Pachernegg); Rhenish Folk Songs for Male Voice Choir: (a) Zu Strasburg auf der langen Brücke (arr. Hummel), (b) Mädchen mit den blauen Augen (arr. Becker); Die Musik kommt (Zimmer); Songs to the Lute: (a) De Besserwesser, (b) Altes Tanzlied, (c) Grossmutter will tanzen, (d) Bavarian Intermezzo (Zilcher); Polka, Im Dorfkrügel (Siede); Songs for Male Voice Choir (Nellius): (a) Mein Dorf, (b) Spinn, Mäkskesken, spinn, (c) O Hannes wat'n Hant; Westphalian Folk Dances and Songs to the Lute: (a) Königsquadrille, (b) Kruphöhneken (Schröder), (c) Schluuz, (d) Fine Lüd (Schröder), (e) After Drubbel, (f) Pumpernickellied (Holberg); Spanish Folk Song; Polish Folk Song; Song Potpourri, From the Rhine to the Danube (Rhode). **9.5,** News and Sports Results. **9.30,** Serenade and Dance Music. **11.0** (approx.), Close Down.

LAUSANNE.—See **Radio-Suisse Romande.**

LEIPZIG

389.6 metres; 120 kW.; and **DRESDEN, 319 metres.—12 Noon,** News, Weather, Snow Report, and Time. **12.15 p.m.,** Folk Songs on Gramophone Records, followed by Exchange Quotations. **1.0,** Film Report. **1.30,** Talk: Unemployment and Young People. **2.0,** Handwork for Children. **2.35,** Economic Notes. **3.0,** Orchestral Concert, conducted by Ernst Schwassmann: Overture, Ali Baba (Cherubini); Ländliches Fest (Scharwenka); Selection from The Bartered Bride (Smetana); Military March in E Flat (Schubert); Lyric Suite (Grieg); Selection from Der Vagabund (Zeller); Rhapsody in B Minor, Op. 25 (Hartung); Waltz from Countess Maritza (Kálmán); Gruss and Weissenfels (Walter). **4.30,** Weather and Time. **4.50,** Economic Notes. **5.0,** Talk on Hygiene. **5.15,** Talk on Taxation. **5.30,** Spanish Lesson. **5.50,** Programme to be announced. **6.0,** Talk: Relations between the Balkans and Bagdad. **6.30,** Concert by the Leipzig Symphony Orchestra, conducted by Hilmar Weber: Overture, Der Haideschacht (Franz von Holstein); Selection from Tiefland (d'Albert); Czardas No. 9 (Michiels); Die Solisten (Schreiner); Melody in F (Rubinstein); Selection from Faust (Gounod); Schatz-Walzer (Joh. Strauss); Selection from Hoheit tanzt Walzer (Ascher). **8.0,** News. **8.10,** Der Schwarzkünstler (The Magician)—Comedy (Emil Gott). **9.20,** Dance Music. **11.0** (approx.), Close Down.

LINZ.—See **Vienna.**

LWOW

381 metres; 16 kW.—**5.5 p.m.,** Miscellaneous Items. **6.20,** See **Warsaw. 7.0,** See **Berlin (Witzleben). 8.30,** Programme relayed from **Cracow (312.8 metres). 9.15,** Dance Music relayed from the Bagtela Variety Theatre **9.55,** See **Warsaw. 10.30** (approx.), Close Down.

MADRID

ARANJUEZ (EAQ), 30.43 metres; 20 kW.—**10.30 p.m.,** Variety Concert. **10.45,** Radio Chronicle. **11.0,** Variety Concert (contd.). **11.35,** Talk. **11.40,** Light Music. **12 Midnight** (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 424.3 metres; 2 kW.—**7.0 p.m.,** Chimes, Exchange Quotations, Programme for Children and Request Gramophone Concert. **8.15,** News Bulletin. **8.30 to 9.0,** Interval. **9.0,** Linguaphone English Lesson. **9.30,** Chimes, Time Signal, Talk on the Province of Madrid and Band Concert, relayed from the Hotel Nacional. **11.45,** News Bulletin. **12 Midnight,** Chimes and Close Down.

MALMO.—See **Stockholm.**

MILAN.—See **Turin.**

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—**5.30 p.m.,** German Transmission: Reading (Volkner). **6.0,** See **Prague. 10.0** (approx.), Close Down.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—**4.0 p.m.,** News. **4.10,** Announcements. **4.30,** Concert. **5.30,** Concert of Light Music from the Radio Theatre. **8.0,** Review of the Week and Answers to Correspondents in French. **8.55,** Time. **9.5,** Press Review.

MOTALA.—See **Stockholm.**

MUHLACKER.—See **Stuttgart.**

MUNICH

533 metres; 60 kW. Relayed by **Augsburg** and **Kaiserslautern, 560 metres;** and **Nürnberg, 239 metres.—3.0 p.m.** (from **Nürnberg**), Vocal and Instrumental Concert: Fantasiestücke for Clarinet and Pianoforte (Schumann); Three Songs for Baritone (Grieg): (a) Ein Schwan, (b) Im Kahne, (c) Zur Johannisnacht; Tarantella for 'Cello (Popper); Three Tenor Solos (Schumann): (a) In der Fremde, (b) Zwielicht, (c) Mit Myrten und Rosen; Scherzo for 'Cello (D. van Goens). **3.40,** Talk: Old Tinkers' Dances. **4.0,** Concert by the Eckl-Peilnstein Orchestra: Overture, Fränlein Loreley (Lincke); Selection from Fédora (Giordano); Children's Dance and Lyric Intermezzo from the Miniature Suite (Coates); Waltz, Fesche Geister (Joh. Strauss); Diavoletta (Lindemann); Potpourri of Soldiers' Songs (Hannemann). **5.15,** Talk: Problems of Town Planning. **5.35,** Agricultural Talk. **5.55,** Time, Weather, and Agricultural Notes. **6.5,** Talk: F. X. Schädler, a Bavarian Politician of the Bismarck Period. **6.25,** Musical Patchwork (Bruno Aulich). **7.20,** The Forest Primeval—a Radio Play of the Tropics (Fred von Hoerschelmann). **8.30,** Concert of Chamber Music by the Neustadt Trio: Sonata da camera in A (Richter); Sonata No. 8 in D for Violin, 'Cello, and Pianoforte (Leclair); Trio No. 19 in D Minor for Violin, 'Cello, and Pianoforte (Haydn). **9.20,** Time, Weather, News, and Sports Notes.

NAPLES.—See **Rome.**

NOTODDEN.—See **Oslo.**

OSLO

1,083 metres; 60 kW. Relayed by **Fredrikstad, 365.8 metres; Hamar, 574.7 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres,** and **Rjukan, 447.1 metres.—4.0 p.m.,** Concert, relayed from the Grand Hotel: Overture, Le Roi d'Ys (Lalo); Waltz, Die Schönbrunner (Lanner); Bizet Potpourri (arr. Urbach); Une larme (Mussorgsky); Slav Rhapsody (Friedman). **5.0,** German Lesson. **5.30,** Divine Service. **6.0,** Announcements, Weather and News. **6.30,** Agricultural Press Review. **7.0,** Time Signal. **7.1,** Talk: Our Thoroughfares and Traffic Regulations. **7.30,** See **Berlin (Witzleben). 8.40,** Weather and News. **9.0,** Topical Talk. **9.15,** Relay of European Stations. **11.0** (approx.), Close Down.

OSTERSUND.—See **Stockholm.**

PALERMO

537.6 metres; 3 kW.—**7.0 p.m.,** Announcements, Agricultural Notes, and Giornale radio. **7.20,** Popular Music on Gramophone Records. In the interval at **7.30,** Time and News. **7.45,** Concert of Operetta Music: Selection from (a) Der Tanz ins Glück (Stolz). (b) Ave Maria (Bettinelli), (c) Fascino azzurro (Bellini), (d) I pizzi di Venezia (Ranzato), (e) Madama di Tebe (Lombardo), and (f) Countess Maritza (Kálmán). In the interval, Mamma—Comedy in One Act (Ettore Moschino). **9.55,** News.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW. Time Signal (on **2,650 metres**) at **9.26 a.m.** and **10.26 p.m.** (Preliminary and 6-dot Signals.)—**5.45 p.m.,** Le Journal Parlé. **7.20,** Weather Report. **7.30,** Gramophone Concert. Part 1: Schubert Programme: Overture, Rosamund; Ständchen; Wohin?; The Unfinished Symphony. Part II: Variety Music. **9.0** (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—**6.45 p.m.,** Journal Parlé. **7.0,** Programme for Children. **7.30,** Popular Music on Gramophone Records. **8.0,** Agricultural Talk. **8.5,** Interval. **8.15,** Le Captif—Play (Tristan Bernard). **8.45,** Sponsored Programme. **9.45,** Popular Music on Gramophone Records. **10.30,** News.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—**6.45 a.m.,** Physical Culture. **7.30,** Weather and Physical Culture (contd.). **7.45,** Scherzo, Nocturne, and Wedding March from A Midsummer Night's Dream (Mendelssohn) on Gramophone Records. **8.0,** Press Review and Weather. **12 Noon,** Protestant Address. **12.30 p.m.,** Orchestral Concert: Selection from Carmen (Bizet); Songs: (a) O Paradis, from L'Africaine (Meyerbeer), (b) Dieu que ma voix troublante, from La Juive (Halévy); Aria from Tannhäuser (Wagner); Song at the Forge from Siegfried (Wagner). **1.0,** Exchange, News, and Weather. **1.5,** Chamber Music Concert. **1.30,** Exchange. **1.35,** Orchestral Concert (contd.): Songs (Schumann): (a) Widmung, (b) Der Nussbaum, (c) In der Ferne, (d) Der Lotos blume; Selection from The Count of Luxembourg (Lehár); Strauss Waltz Potpourri. **2.0,** Exchange. **3.45,** Exchange and Market Prices. **6.10,** Agricultural Talk. **6.30,** Gramophone Records of Light Music. **6.45,** Legal Talk. **7.0,** See **Berlin (Witzleben).** **7.45,** Commercial Prices and News. **8.0,** A Play from the Repertoire of the Comédie Français by Artists of the Comédie Français. In the intervals at **8.30,** News, Sports Notes, and Weather, at **8.40,** Review by Christophe, and at **9.15,** Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA); 306 metres; 25 kW. Relayed by **W8XK** on **48.86 metres** and **25.27 metres.**—**9.0 p.m.,** Work-a-day Thoughts. **9.5,** Business News. **9.15,** Programme to be announced. **9.30,** Weather Report. **9.32,** Market Reports. **9.45,** Pianoforte Interlude. **9.50,** David Lawrence Dispatch. **9.55,** KDKA Artist Bulletin. **9.58,** Programme Announcements. **10.0,** Programme to be announced. **10.15 to 11.15, New York** Relay. **10.15,** The Adventures of Dr. Doolittle. **10.30,** Singing Lady. **10.45,** Little Orphan Annie. **11.0,** Our Daily Food: George Rector's Cooking School. **11.15,** Time Signal. **11.16,** Weather Report. **11.17,** Teaberry Sport Review. **11.22,** Press News Reeler. **11.27,** Strange Facts. **11.29,** Temperature Report. **11.30,** KDKA Orchestra **11.45 to 12.30 a.m. (Friday), New York** Relay. **11.45,** To-day's News by Lowell Thomas. **12 Midnight,** Pepsodent Amos 'n' Andy. **12.15 a.m.,** Carson Robison and his Barbasol **Buckaroos. 12.30,** Westinghouse Parade. **1.0 to 3.15,** New York Relay. **1.0,** Cape Diamond Lights. **1.30,** Time Signal and Rin Tin Tin Thrillers. **1.45,** Thurston, the Magician. **2.0,** Death Valley Days. **2.30,** Leo Joy's Dancing Strings. **3.0,** Wilfred Glenn (Basso). **3.15,** Programme to be announced. **3.30,** Ilo May Bailey and Orchestra, from **New York. 3.45,** Bradley Kincaid, from **New York. 4.1,** Teaberry Sport Review. **4.11,** Temperature Report. **4.12,** Weather Report. **4.13,** KDKA Artist Bulletin. **4.15,** Press Last Minute News Flashes. **4.20,** Heart Songs by Louise Frayne. **4.30,** Henry Halstead and his Californians. **5.0,** Hotel McAlpin Orchestra, from **New York. 5.30,** Time Signal and Good-night.

PÜRSGRUND.—See **Oslo.**

POZNAN

335 metres; 1.9 kW.—**6.28 p.m.,** Time Signal. **6.30,** See **Warsaw. 7.0,** See **Berlin (Witzleben).** In the intervals, News and Announcements. **8.30,** See **Cracow. 9.15,** Topical Talk. **9.30,** Time, Sports Notes and Police Announcements. **9.45** (approx.), Close Down.

PRAGUE

488.6 metres; 120 kW.—**3.10 p.m.,** See **Brno. 4.10,** Talk on Economics. **4.20,** Programme for Children. **4.50,** Light Music on Gramophone Records. **5.5,** Agricultural Talk. **5.15,** Talk for Workers. **5.25,** News in German. **5.30,** German Transmission: Agricultural Report and Popular Music on Gramophone Records. **6.0,** News. **6.5,** Talk: Modern Houses for Families. **6.25,** Awakening—Play in Four Acts (Vrchlicky). In the interval at **8.0,** Time Signal. **8.20,** Talk: Dr. Alois Rasin. **8.35,** Concert in Honour of the Latvian National Festival. **9.0,** Time Signal. **9.1,** News Bulletin. **9.15,** Dance Music from the Alcron Hotel. **12.0** (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; **LAUSANNE, 689 metres;** and **GENEVA, 760 metres.**—**5.20 p.m.** (from **Geneva**). Esperanto Lesson. **5.35** (from **Lausanne**), Italian Lesson. **6.0** (from **Geneva**), Weather, News, and Announcements. **6.15** (from **Lausanne**). Answers to Correspondence. **6.30** (from **Geneva**), Theatre Notes. **7.0,** See **Berlin (Witzleben). 8.0** (from **Geneva**). Concert by the Station Quintet. **9.0,** News and Weather Forecast. **9.10,** Talk: The Work of the League of Nations. **9.25** (approx.), Close Down.

RIGA

525 metres; 15 kW.—**6.15 p.m.,** Lithuanian National Festival. Concert with Addresses, relayed from the Maison des Têtes Noires. In the interval: News. After the Concert: Weather and News. **8.50,** Chamber Music. **9.30,** Orchestral Concert of Popular Music, conducted by J. Medins.

RJUKAN.—See **Oslo.**

ROME

Call 1RO, 441 metres; 50 kW. Relayed by **Naples, 319 metres;** and **2RO, 25.4 metres.**—**7.0 a.m.,** Gymnastics. **7.15 to 7.30,** Giornale Radio and Announcements. **11.30,** Weather and Light Music on Gramophone Records. **12 Noon,** Time and Announcements. **12.2 to 1.15 p.m.,** Concert by the Station Orchestra. In the interval from **12.30 to 12.45,** Giornale Radio and Exchange. **3.45,** Children's Radio Review. **4.10,** Announcements. **4.15,** Exchange and Giornale Radio. **4.30,** Concert by the Station Orchestra: Overture, The Magic Flute (Mozart); Edra (Carducci); Selection from The Girl of the Golden West (Puccini); Melody (Di Piramo); Oriental Dance (Grieco); Melody (Erwin); Selection from the Merry Widow (Lehar); Ah! Willi! (Baias). **5.15 to 6.0,** Interval. **6.0,** Giornale Radio. **6.10 (from Naples),** Shipping and Sports Notes. **6.15,** Agricultural Notes and Announcements. **7.0,** Time and Announcements. **7.2,** Talk. **7.15,** Light Music on Gramophone Records. **7.20,** Talk for the Housewife. **7.30,** Sports Notes and Tourist Report. **7.45,** Symphony Concert, conducted by Willy Ferrero. In the intervals, Film Notes, Talk on Literature and Art and News.

SALZBURG.—See **Vienna.**

SCHENECTADY

GENERAL ELECTRIC COMPANY, WGY; 379.5 metres; 50 kW. Relayed at intervals by **W2XAF** on **31.48 metres** and by **W2XAD** on **19.56 metres.**—**12 Midnight,** Jane Froman and her Orchestra, from **New York. 12.15 a.m. (Friday),** Stock Reports. **12.30 to 3.0, New York** Relay. **12.30,** Regimentalists. **12.45,** The Goldbergs. **1.0,** Fleischmann Hour. **2.0,** Captain Henry's Show Boat. **3.0,** Lucky Strike Hour and Programme Résumé.

SCHWEIZERISCHER LANDESSENDER

BEROMUNSTER, 459 metres; 60 kW.; BASLE, 241.1 metres; and **BERNE, 245.9 metres.**—**11.28 a.m.,** Time Signal from Neuchâtel Observatory. **11.30,** Weather and News. **11.40,** Swiss Music on Gramophone Records. **12.35 p.m.,** Weather and Exchange. **12.45 to 2.30,** Interval. **2.30** (from **Basle**), Talk for Women: Helene Lange. **3.0,** Concert by the Radio Orchestra. **4.0,** Variety Music on Gramophone Records. **4.30,** Weather. **4.35 to 5.30,** Interval. **5.30** (from **Basle**), Reading from Amor Dei (Kolbenheyer). **6.0,** Time, Weather and Traffic Report. **6.15** (from **Basle**), Italian Lesson. **7.0,** See **Berlin (Witzleben). 8.0** (from **Basle**), The Obliging Saleswoman—Sketch (Hamik). **8.30,** Weather and News. **8.40,** Concert by the Radio Orchestra. **9.15** (approx.), Close Down.

SEVILLE

368.1 metres; 1.5 kW. **2.0 p.m.,** Concert by the Station Orchestra. **9.0,** Concert. Part I: Pianoforte Recital: Waltz in A flat (Chopin); Symphonic Studies (Schumann); Adagietto (Poulenc); Dance from Petroushka (Stravinsky). Part II: Song Recital: Elegy (Massenet); Song (Ronzato-Borella); Habañera and Scene from Carmen (Bizet); Seven Popular Spanish Songs (Falla). Part III: Flamenco Songs. In an interval, News, Exchange, Market Prices and Weather.

SOTTENS.—See **Radio-Suisse Romande.**

STOCKHOLM

Call SASA; 436 metres; 55 kW. Relayed by **Boden, 1,229.5 metres; Göteborg, 322 metres; Horby, 257 metres; Motala, 1,248 metres; Ostersund, 770 metres;** and **Sundsvall, 542 metres.**—**4.5 p.m.** (from **Göteborg**), Studio Service. **4.30,** Programme for Children. **4.45,** Light Music on Gramophone Records. **5.45,** Talk. **5.55,** Talk in English by C. S. Allwood, relayed from **Jönköping (201.3 metres). 6.15,** Weather and News. **6.30,** Talk. **6.55,** Concert from **Berlin (Witzleben). 8.0** (from **Göteborg**), Talk by Ludvig Hagwald: Winter Birds and how I snapped them with my Camera. **8.25,** Brahms Song Recital by Else Brems, relayed from **Malmö (231 metres):** Liebestreu; Auf die Nacht; In der Spinnstub'n; Minnelied; Sapphische Ode; Der Schmied Meine Liebe ist grün. **8.45,** Weather and News. **9.0,** Orchestral Concert: Eine kleine Nachtmusik (Mozart); Minuet (Schubert); Airs (Kreisler): (a) Liebesfreud, (b) Liebeslied, (c) Schön Rosmarin; Waltz, Neu Wien (Joh. Strauss); Potpourri, Wien bei Nacht (Komzak). **10.0** (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—**11.30 a.m.,** Gramophone Concert of Classical Music. **12.45 p.m.,** News. **1.0,** Time and Exchange. **1.5,** Popular Music on Gramophone Records. **2.0 to 4.15,** Interval. **4.15,** French Elocution Lesson. **4.30,** Programme for Children, relayed from **Bordeaux-Lafayette. 6.0,** Historical Talk in French. **6.15,** Programme for Women in French. **6.30,** Variety Music on Gramophone Records. **7.30,** Time and News. **7.45,** Lottery Results. **8.0,** Gala Concert by the Station Orchestra and Soloists. Conductor: Maurice de Villers. Symphonic Fragments from La Glaneuse (Fourdrain); La légende du point d'Argentan—One-Act Musical Play (Fourdrain); Duet and Fable of the Nightingale from La petite mariée (Lecocq); Pomme d'Api—One-Act Operetta (Offenbach). **10.30** (approx.), Close Down.

STUTTGART

360.5 metres; 60 kW.; and **FREIBURG, 570 metres.**—**4.0 p.m.,** Concert by the Stuttgart Philharmonic Orchestra, conducted by Gustav Görlich; Soloists, Anita Oberländer (Soprano) and Isolde Dobrowolny (Pianoforte): Overture to the Lyric Tragedy, Thésée (Lully); Concerto in G for Pianoforte and String Orchestra (Rameau-Rehberg); Minuet from Verwandlung Actaeons in einen Hirsch (Dittersdorf); Concerto in B Flat for Pianoforte and Orchestra (Mozart); Five Poems by Mathilde Wesendonck set to Music by R. Wagner: (a) Der Engel, (b) Träume, (c) Schmerzen, (d) Stehe still, (e) Im Treibhaus. **5.15,** Time, Weather and Agricultural Notes. **5.25** (from **Mannheim**), Talk: Amusing Aids to Ready-Reckoning. **5.50** (from **Karlsruhe**), Talk: Tobacco Growing in German Colonisation. **6.15,** Time Signal and News Bulletin. **6.30,** Concert from **Frankfurt. 7.0,** See **Berlin (Witzleben). 9.0,** Time, Weather, News and Programme Announcements.

SUNDSVALL.—See **Stockholm.**

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—**6.0 p.m.,** News Bulletin. **6.15,** Opera Music: Melodies from: (a) Rigoletto (Verdi), (b) The Pearl Fishers (Bizet), (c) Werther (Massenet). **6.30,** Programme for Children. **7.0,** Music by an Argentine Orchestra. **7.15,** Racing Results, Market Prices and News. **7.25,** Local News. **7.30,** Chansonettes. **7.45,** 1812 Overture (Tchaikovsky). **8.0,** Operetta Music: Airs from: (a) La Basoche (Messager, (b) Véronique (Messager), (c) Encore cinquante centimes (Yvain). **8.15,** Concert by a Viennese Orchestra. **8.45,** Extracts from Countess Maritza—Operetta (Kálmán). **9.15,** Accordion Music. **9.30,** Songs from Sound Films. **9.45,** Orchestral Concert of Operetta Music with Violin Solos: Waltz from The Gipsy Princess (Kálmán); Selection from Rose Marie (Friml); Violin Solos: (a) The Flight of the Bumble bee (Rimsky-Korsakov), (b) Estrellita (Ponce), (c) Waltz in A (Brahms). **10.15,** North African News. **10.30,** Concert for Listeners in Morocco: Concerto in B Minor (Saint-Saëns); Two Airs from Les Saltimbanques (Ganne); Burlesque (Nadami); Les années sont courtes (Dorin); Ca, c'est Paris (Padilla). **11.0,** Programme in English by the I.B.C.: Concert of Italian Opera Music and Light Music: Extracts from: (a) Rigoletto (Verdi), (b) Il Trovatore (Verdi), (c) I Pagliacci (Leoncavallo), (d) Cavalleria Rusticana (Mascagni); Rallye lorraine (Sombrun); Souvenir de Rouen (Sombrun); Souvenir des bois d'Avron; Marche des cerfs. **12.15 a.m. (Friday),** Military Music. **12.30** (approx.), Close Down.

TRIESTE

247.7 metres; 10 kW.—**4.10 p.m.** till Close Down, See **Turin.**

TRONDHEIM.—See **Oslo.**

TURIN

273.7 metres; 7 kW. Relayed by **Milan, 331.5 metres; Genoa, 312.8 metres;** and **Florence, 500.8 metres.**—**4.10 to 5.0 p.m.,** Concert by the Station Orchestra: Selection from Titus (Mozart); Richette (Selani); Petite Suite de concert (Coleridge-Taylor); To Spring (Grieg); Scherzo (Lalo); Russian Suite (Leopold). **5.45,** Giornale Radio and Agricultural and Dopolavoro Notes. **6.0,** Popular Music on Gramophone Records. In the intervals at **6.20,** Giornale Radio; at **6.30,** Time Signal, Announcements, and Tourist Talk; and at **7.0,** Giornale Radio and Weather Forecast. **7.20,** Talk for Housewives, followed by Gramophone Records of Popular Music. **8.0,** Relay of an Opera. In the intervals, Talk, Literary Notes, and Giornale Radio.

VATICAN CITY

19.84 metres (Morning) and **50.26 metres (Evening);** 10 kW.—**10.0 to 10.15 a.m.,** Religious Information in French. **7.0 to 7.15 p.m.,** Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by **Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 246 metres;** and **Salzburg, 218.8 metres.**—**3.25 p.m.,** Concert by Ed. Seidl and his Orchestra: Overture, Carnival in Nice (Dietrich); Waltz, Schwert und Leier (Jos. Strauss); Fantasia on The Tales of Hoffmann (Schreiner); In the Mystic Land of Egypt (Ketelbey); Ein Jahrmarkt im Dorfe (Hruby); Second Small Suite (de Micheli); Violin Solos: (a) J'y pense (Ardla), (b) Rosza-Csardas (Hubay); Selection from Der Lebemann (Grünfeld); Two Pieces (Kreisler): (a) Ich wär' so gern einmal verliebt, (b) Ein stilles Glück; The Bells of Prague (Fucik); March, En Garde de la Cerda). **5.5,** Talk: Some Curious Things about Wagner. **5.30,** Talk: Income Tax Assessment Forms. **5.55,** Talk: Peace of Spirit. **6.20,** Theatre Talk. **6.25,** Time, Weather, and Programme Announcements. **6.35,** Talk: Twenty-five Years of Classical Viennese Dancing. **7.0,** Popular Concert by Oscar Jascha and his Orchestra. Overture, Der Opernball (Heuberger); Dream Waltz (Millöcker); Serenata (Moszkovsky); Rumba, Schön sind lachende Frau'n (Lehár); Selection from The Rose of Stamboul (Fall); Overture, Wiener G'schichten (Hellmesberger-Jascha); Waltz, Jugendideale (Lehár); Slow Foxtrot, Nur die älteren Herren (Loewe-Jascha); Intermezzo from Naila (Delibes); March Potpourri (Komzak). **8.15,** Mass in E Flat (Hummel) by the Hofmusikkapelle. **9.15,** News, Weather, and Announcements. **9.30,** Snow Report. **9.45,** Dance Music by Charley Kandriot and his Jazz Band, with Song Refrains by Leo Greiner.

WARSAW

1,411 metres; 120 kW.—**10.58 a.m.,** Time Signal and Bugle Call from the Tower of St. Mary's Church, **Cracow. 11.5,** Programme Announcements. **11.10,** Popular Music on Gramophone Records. **11.30,** Weather Forecast. **11.35,** Sixteenth Concert for Schools. The Philharmonic Orchestra, conducted by Ozimanski. Soloists: L. Szczepanska (Soprano) and W. Kochanski (Violin). Introductory Talk by T. Mayzner. Academic Festival Overture (Brahms); Ballet Music from Rosamund (Schubert); Violin Solos: (a) Ave Maria (Schubert-Wilhelmy), (b) Moment musical (Schubert-Auer), (c) Abendlied (Schumann-Joachim), (d) Waltz in A (Brahms-Hochstein), (e) Two Hungarian Dances (Brahms-Hochstein); Overture, Die Fledermaus (Joh. Strauss); Songs: (a) The Blue Danube (Joh. Strauss), (b) Air from Die Fledermaus (Joh. Strauss); Melodies (Strauss): Gallop, Tik-Tak, Waltz, Lustige Wien, Persian March. **1.0 to 2.10 p.m.,** Interval. **2.10,** Announcements. **2.15,** Economic Notes. **2.25,** Light Music on Gramophone Records. **2.35,** Talk. **2.50,** Gramophone Records (contd.). **3.25,** French Lesson. **3.40,** Talk. **4.0,** Quartet in C Major, Op. 18, No. 4 (Beethoven), on Gramophone Records. In the interval, Announcements. **4.40,** Topical Talk. **4.55,** Programme Announcements. **5.0,** Light Music from the Cristal Restaurant. In the interval, News. **6.0,** Miscellaneous Items. **6.20,** Agricultural Notes. **6.30,** Literary Programme. **6.45,** Radio Journal. **7.0,** See **Berlin (Witzleben). 8.50,** Dramatic Programme from **Cracow (312.8 metres). 9.15,** Dance Music relayed from **Lwów (381 metres). 9.55,** Aviation Weather Report and Police Notes. **10.0,** Dance Music from the Café Gastronomia. **11.0** (approx.), Close Down.

WILNO

563 metres; 16 kW.—4.0 p.m., Popular Music on Gramophone Records. **4.40,** See **Warsaw. 4.55,** Programme Announcements. **5.0,** See **Warsaw. 5.40,** Lithuanian Report. **5.45,** Miscellaneous Announcements. **6.0,** Talk. **6.30,** The Letter Box. **6.30,** Reading. **6.45,** See **Warsaw. 10.0,** Relay of Foreign Stations. **11.0** (approx.), Close Down.

ZAGREB

397 metres; 0.75 kW.—**6.5 p.m.,** Announcements and News Bulletin. **6.25,** Talk in Memory. **6.50,** Introductory Talk to the Following Relay. **7.0,** See **Berlin (Witzleben). 9.0,** News Bulletin and Weather Forecast, followed by Winter Sports Notes. **9.10,** Dance Music by the Sever Dance Band, relayed from the Grill Room. **10.0** (approx.), Close Down.

ZURICH.—See **Schweizerischer Landessender.**

FRIDAY

FEBRUARY THE SEVENTEENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL	Light classical concert. Orchestral concert. Mr. S. P. B. Mais: "S.O.S." "The Point of View" and "The Carrier Pigeon," two plays by Eden Phillpotts. Violin recital.
LONDON REGIONAL	Instrumental concert. "150 Years Ago," feature programme, by L. W. A. Baily. B.B.C. Concert of Contemporary Music.
MIDLAND REGIONAL	A recital of Spanish music. Gloucester Orpheus Society's concert. A concert from the Beaufort Cinema, Birmingham. "The Fairy Folk," orchestral programme.
NORTH REGIONAL	Orchestral concert. A relay from the Empire Theatre, York.
WEST REGIONAL	A Welsh programme. National programme.
SCOTTISH REGIONAL	Orchestral concert. Band concert. Dance music.
BELFAST	Belfast Philharmonic Society concert, relayed from the Ulster Hall.

ABROAD

BRUSSELS (No. 1)	The Radio Symphony Orchestra, conducted by J. Kumps.
LAHTI	The Radio Orchestra, conducted by Erkki Linko.
PRAGUE	The Station Orchestra, conducted by O. Jeremias.
RADIO PARIS	Symphony concert, conducted by E. Bigot.
ROME	Vocal and instrumental concert.
STRASBOURG	Schubert concert, conducted by M. de Villers.
STUTTGART	The Philharmonic Orchestra, conducted by E. Kahn.

ATHLONE

413 metres; 60 kW.; and **CORK, 224.4 metres.** 1.30 to **2.0 p.m.,** Time Signal, Weather Report, Stock Report and Light Music on Gramophone Records. **6.0,** Popular Music on Gramophone Records. **6.15,** Programme for Children. **7.0,** Light Music on Gramophone Records. **7.20,** News Bulletin. **7.30,** Time Signal. **7.31,** Talk on Gardening. **7.45,** Monologues by Violet M. Powell. **8.0,** Violin and Pianoforte Duets by Alice Brough and Miss McDonnell. **8.25,** Vocal Duets by M. Sheppard and M. Cutler. **8.45,** Oranges and Lemons—Play presented by the Dublin Repertory Company. **9.45,** Songs by Florence Howley (Contralto). **10.0,** Orchestral Music. **10.30,** Time Signal, News, Weather Report, and Close Down.

BARCELONA

RADIO-BARCELONA, Call EAJ1, 348.8 metres; 8 kW. **6.0 p.m.,** Trio Concert: Selection from Hamlet (Thomas); Pastoral Rondo on a Theme by Beethoven (Tavan); Selection from Le Roi de Lahore (Massenet); Extase (Ganne); Minuet from Le Bourgeois Gentilhomme (Lulli); Duet of Dimitri and Marina from Boris Godunov (Mussorgsky). **7.0,** Request Gramophone Concert. **7.30,** Exchange Quotations. **8.0,** Gramophone Records of Light Music, and News. **9.0,** Chimes, Weather, Programme for Seamen, Market Prices, and Exchange Quotations. **9.10,** Concert by the Station Orchestra: Pasodoble, Ecos españoles (Marquina); Selection from La Rosa del azafran (Guerrero); Waltz, Visions (Waldteufel); Air de Ballet (de Taye); Intermezzo (Schmalstieh); Hungarian March (Berlioz). **10.0,** Recitations. **10.15,** Concert relayed from the Café Español. **11.0** (in the interval), News. **12 Midnight** (approx.), Close Down.

BARI

269.8 metres; 20 kW.—**7.0 p.m.,** Agricultural Notes, Tourist Talk, and Dopolavoro Announcements. **7.20,** Giornale Radio and Weather. **7.30,** Time Signal and Announcements. **7.35** (approx.), Concert of Opera Music: Overture, The Bohemian Girl (Balfe); Baritone Solos: Songs from: (a) Don Pasquale (Donizetti), (b) Fedora (Giordano); Selection from The Huguenots (Meyerbeer); Soprano Solos: Arias from (a) Loreley (Catalani), (b) Carmen (Bizet); Selection from La Favorita (Donizetti); Overture, The Force of Destiny (Verdi); Baritone Solo from Hérodiade (Massenet); Soprano Solo: Song from A Masked Ball (Verdi); Selection from La Juive (Halévy); Soprano Solo from Mephistopheles (Boito). In the interval, Sports Talk. **9.55,** News Bulletin.

BASLE.—See **Schweizerischer Landassender.**

BELGRADE

436.4 metres; 2.8 kW.—**3.0 p.m.,** Concert by the Radio Orchestra. Overture, Dorcevska posla (Krstic); Potpourri of Yugoslav Melodies (Svoboda); Serbian Dance (Fraite); Petite Suite No. 1 (Micheli); Violin Solo: Canzone della sera (Armandola); Czech Polka (Balling); Moravian Melody (Balling); Gallop, Chlanen attacke (Bohm). **4.0,** Popular Music on Gramophone Records. **5.55,** Time and Programme Announcements. **6.0,** Popular Music on Gramophone Records. **6.30,** Talk. **7.5,** See **Vienna.** **9.0,** News.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW. **11.55 a.m.,** Nauen Time Signal. **12.35, p.m.,** News Bulletin. **1.0,** Gramophone Concert of Operatic and Light Music, relayed from **Berlin (Witzleben).** **2.0,** Talk for Girls. **2.30,** Weather and Exchange. **2.45,** Review of Periodicals. **3.0,** Review of Books—Modern German Youth. **3.30,** See **Leipzig.** **4.10,** Talk on Health: Röntgen and Röntgen Rays. **4.30,** Talk: East Asiatic Battlefields. **5.0,** Pianoforte Recital by Franz Osborn: Five Preludes (Debussy): (a) La Fille aux Cheveux de Lin, (b) Ce qu'a vu le vent d'Ouest, (c) La Cathédrale engloutie, (d) Minstrels, (e) La Sérénade interrompue. **5.30,** Talk for Workers. **5.55,** Weather and Announcements. **6.0,** Talk: Modern Science and the Intellectual Outlook of the Age. **6.30,** A Poem. **6.35,** Concert of Light Music from the Eden Pavilion. **7.0,** Talk by Kurt G. Sell: What they are talking about in America, relayed from **America** (on Gramophone Records). **7.15,** See **Langenberg.** **9.15,** Weather, News and Sports Notes. **9.45,** Weather Report for Shipping. **10.0,** Programme from **Langenberg.** **11.0** (approx.), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—**5.20 p.m.,** Gramophone Concert of Operetta Music: Soprano Solo from Der Obersteiger (Zeller); Tenor Solos: (a) Song from Barbe bleue (Offenbach), (b) Song from Gasparone (Millöcker); Two Duets from The Land of Smiles (Lehar). **5.40,** One of Eighty Million. **5.55,** The Witzleben Station informs its Listeners. . . . **6.0,** Topical Talk. **6.10,** Pictures of Everyday Life in the City. **7.10,** Concert by the Berlin Wireless Orchestra, conducted by Eugen Jochum. Soloist: Erna Berger (Soprano). Overture, The Merry Wives of Windsor (Nicolai); Aria from The Merry Wives of Windsor (Nicolai); Dorfmusikanten—Sextet in F (Mozart); Frühlingsstimmen-Waltz (Joh. Strauss); Kaiser-Walzer (Joh. Strauss). **8.10,** News and Sports Notes. **8.25,** Concert of Classical String Quartets: Quartet in G, Op. 77, No. 1 (Haydn); Quartet in B flat, Op. 18, No. 6 (Beethoven). **9.10,** Weather, News, and Sports Notes, followed by Gramophone Dance Music. **11.0** (approx.), Close Down.

BERNE.—See **Schweizerischer Landessender.**

BEROMUNSTER. — See **Schweizerischer Landessender.**

BODEN.—See **Stockholm.**

BODO.—See **Oslo.**

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—**7.30 p.m.,** News Bulletin. **7.40,** Light Music on Gramophone Records. **7.55,** Lottery Results. **8.0,** Spanish Lesson. **8.15,** News and Weather. **8.30,** Wagner Concert on the Fiftieth Anniversary of the Composer's Death: Spinning Chorus from The Flying Dutchman; Selections from Tristan and Isolde; Forest Murmurs and Siegfried Idyll from Siegfried; Overture, The Mastersingers. After the Concert, Relay from **Toulouse-Pyrénées (255 metres).**

BRATISLAVA

279 metres; 14 kW.—**5.25 p.m.,** Pianoforte Recital by V. Pisteläk: Chromatic Fantasia and Fugue (Bach-Busoni); Toccata, Op. 72 (Saint-Saëns). **5.50,** See **Prague.** **6.30,** Josef Svare Concert by the Station Orchestra, conducted by J. Odehäzel. **7.0** till Close Down. See **Prague.** **9.15** (approx.), Close Down.

BREMEN.—See **Hamburg.**

BRESLAU

325 metres; 60 kW; and **GLEIWITZ, 253 metres.**—**12.5 p.m.,** Weather for Farmers. **12.7,** Gramophone Concert: Overture, Oberon (Weber); Old English Dances of Shakespeare's Time; Song from The Magic Flute (Mozart); Prelude and Nocturne in E Flat (Chopin-Sievcking); Wiegenlied (Mozart); Es schnäkeln die Winde (Humperdinck); Overture, The Merry Wives of Windsor (Nicolai). **12.45,** Time, Weather, News and Exchange Quotations. **1.5,** Gramophone Concert (contd.): Overture, Fra Diavolo (Auber); Mazurka (Godard); Pierrot and Pierrette (Husch); Rococo Minuet (Leisz); Potpourri of Old Operetta Music; Waltz from Eva (Lehar); March, Potpourri, Friedericiana (Frederick the Great). **1.15,** Sponsored Programme with Gramophone Records. **2.10,** Agricultural Prices. **2.40,** Talk: With the Zeppelin to South America. **3.10,** Talk: The German Post Office. **3.30,** See **Leipzig.** **4.30,** Weather for Farmers. **4.32,** Talk: Wagner and Friedrich Nietzsche. **5.0,** Talk and Reading: Heinrich Zillich, the Transylvanian Poet. **5.30,** Topical Report. **6.0,** See **Leipzig.** **7.0,** Weather for Farmers. **7.2,** Talk: Richard Wagner's Music. **7.30,** Sonata in F Minor, Op. 5 (Brahms). **8.10,** News. **8.20,** Week-end—Comedy (Noel Coward). **9.40,** Time, Weather, News, Sports Notes and Programme Announcements. **10.0,** Music from **Langenberg.** **11.0** (approx.), Close Down.

BRNO

342 metres 35 kW.—**3.10 p.m.,** Concert by the Station Orchestra, conducted by Stanislav Stanek-Doubravsky. **3.55,** Theatre Review. **4.5,** See **Prague.** **5.5,** Talk on Art. **5.15,** Talk for Workers. **5.25,** German Transmission: News, Sports Notes and Talk on Books. **5.50,** See **Prague.** **6.30,** Bagpipe Recital by Jan Matasek. **7.0,** See **Prague.** **9.15** (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—**12 Noon,** Extracts from the Second and Third Acts of La Gioconda (Ponchielli), on Gramophone Records. **1.0 p.m.,** Le Journal Parlé. **1.10,** Concert by the Little Radio Orchestra, conducted by M. Leemans: Overture, Die Fledermaus (Joh. Strauss); Waltz, Hofballtänze (Lanner); Selection from Lilac Time (Schubert-Berté); Violin Solos (Kreisler): (a) Liebesleid, (b) Liebesfreud; Potpourri, Rendezvous bei Lehár (Hruby). **2.0,** Educational Programme. **5.0,** Gramophone Concert: Trio No. 2 in C (Mendelssohn); Waltz in B (Mozart); Waltz in F (Mozart); Variations on Ah! vous dirai-je maman? (Mozart-Adam); Polonaise (Bach); Symphonic Poem, Mazeppa (Liszt). **6.0,** Dental Talk. **6.15,** Une épreuve décisive—Sketch (Stengers-Hovine). **6.35,** Gramophone Concert: March of the Twelfth Regiment of the Line (Daudenard); La Villanella (Dell'Acqua); Rondino (Beethoven-Kreisler); Aria from Samson and Delilah (Saint-Saëns); Iberia (Albeniz); Schön Rosmarin (Kreisler); March of the Caucasian Chief (Ippolitov-Ivanov). **7.15,** Talk arranged by the Conć Institute. **7.30,** Literary Review. **8.0,** Concert by the Radio Symphony Orchestra, conducted by M. Jean Kumps: Walloon Rhapsody (Ysaye); Songs: (a) Bal de fleurs (Jongen), (b) Mimi's Aria from La Bohême (Puccini), (c) La maison grise (Messager); Walloon Rhapsody (Brumagne). **8.45,** Talk by Mme. Louise Coens. **9.0,** Concert (contd.). Les génies du sommeil (Narbier); Songs: (a) Aria from La Traviata (Verdi), (b) Aria from Sappho (Massenet), (c) Aime-moi (Bemberg); Humoresque (Schoemaker); Jazz Music (Poot). **10.0,** Le Journal Parlé. **10.10,** Request Gramophone Records: Kol Nidrei (Max Bruch); Adagio cantabile from the Pathetic Sonata (Beethoven); The Fourth Symphony (Tchaikovsky). **11.0** (approx.), Close Down.

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW. Programme in Flemish.—**12 Noon,** Concert by the Small Station Orchestra, conducted by P. Leemans: Humorous Overture, Tartuffe (la Gye); Charles Stratton (Dejoncker); Waltz, Fin de siècle (Waldteufel); Selection from I Pagliacci (Leoncavallo); Serenade for Violin (Bass); Dance Fantasia, Wellen-Spiele (Rohrecht); Because (Hardelot); Waltz, My Heart is yours (de Herve); Foxtrot, Weiss du was, lieber Franz (Lombé). **1.0 p.m.,** Le Journal Parlé. **1.10,** Gramophone Concert: Overture, Le roi d'Ys (Lalo); Scherzo Caprice (Kreisler); Serenade (Mendelssohn); Elegiac Melody (Grieg); Overture, Rose Marie (Friml); Chanson intime (de la Presle); Selection from The Girl in the Taxi (Gilbert); Melody from Princes de la Cravache (Alix); March of the Grenadiers from The Love Parade (Schertzinger). **2.0,** Educational Programme. **5.0,** Concert by Mickey's Club Jazz Attraction, conducted by Ludo Langlois. **6.0,** Gramophone Concert: Nocturne from Shylock (Fauré); Hymn to the Sun (Rimsky-Korsakov); Bohemian Dance (Smetana); Overture, Il Guarany (Gomez). **6.15,** Talk: Is Mechanical Progress a Calamity or a Benefit to Mankind? **6.30,** Pianoforte Recital by Jeanne Jaspar. **7.0,** Gramophone Concert: Toccata and Fugue in D Minor (Bach-Hillier); Pastorale and Capriccio (Scarlatti); Liebestraum (Liszt); Mouvements perpétuels (Poulenc); Prelude in D Flat (Chopin); Etude and Mazurka in F Minor (Chopin); Grande valse in A Flat (Chopin). **7.0,** Escales (Ibert), on Gramophone Records. **7.15,** Book Review. **7.30,** Wireless Review. **8.0,** Choral Concert by the Lassalle Club, relayed from **Antwerp;** Conductor: Karel Candael. **8.15,** Rentenieren—Radio Play (Horemans). **8.45,** Choral Concert (contd.). **9.0,** Concert by the Small Station Orchestra, conducted by P. Leemans: Soloists, F. Gilman (Flute) and M. Derissen ('Cello): Overture in Italian Style (Schubert); Suite, Les beaux dimanches (Fauchey); Eclogue (Rabaud); Selection from Gwendoline (Chabrier); Andante for Flute (Mozart); Allegretto for 'Cello (Boccherini); Suite from The Fair Maid of Perth (Bizet). **10.10,** Gramophone Concert: Overture, Die Fledermaus (Joh. Strauss); Selection from Viktoria and her Hussar (Abraham); Hopjes et bopjes (Lauweryns); Melody (Bendix); Selection from Barbe-Bleue (Offenbach); Czardas (Monti); Waltz, Brune ou Blonde (Waldteufel); Glow-Worm Idyll (Lincke); Selection from Cibonette (Hahn); Frolic Sax (Viard); Spanish March, Granada (Garcia). **11.0** (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—**4.0 p.m.,** Orchestral Concert. **5.0,** News and Time. **5.10,** Talk. **5.25,** Orchestral Concert. **6.0,** Talk on Romania. **6.40,** Talk on the following Symphony Concert. **7.0,** Time. **7.2,** Symphony Concert: Overture, Oberon (Weber); Concerto in D Minor for Pianoforte and Orchestra (Brahms); Divertissement rustique (Dragoi); Le poème de l'extase (Scriabin). In the interval at **8.0,** Recitations. **9.0,** News.

BUDAPEST

550 metres; 18.5 kW. Also relayed on **840 metres** from **6.25** to **11.0 p.m. 4.0 p.m.,** Concert by a Cigány Band. **4.50,** Talk. **5.15,** Concert of Music by Denes Budai and Bela Remeny. **6.10,** Review of Foreign Politics. **6.30,** Relay from the Opera House. In the intervals, News. After the Relay, Cigány Music from the Hotel Metropole. **11.0** (approx.), Close Down.

CASSEL.—See **Frankfurt.**

COPENHAGEN

281 metres, 0.75 kW.; and **KALUNDBORG, 1,153 metres,** 7.5 kW. **11.0 a.m.,** Time Signal and Chimes from the Town Hall. **11.2,** String Ensemble Concert, conducted by Harald Anderson, relayed from the Bellevue Strandhotel. **12.15 p.m.,** Programme for Schools. **12.45** to **2.0,** Interval. **2.0,** Song Recital by Otto Hänschell, Cavatina from La Juive (Halévy); Aria from Eugene Onegin (Tchaikovsky); Venezia (Kjerulf); Winter (Rung-Keller); Princesse Gloriant (Gade). **2.20,** Concert by the Teddy Petersen Orchestra, relayed from the Wivex Restaurant. **4.0,** Programme for Children. **4.40,** Exchange and Fish Market Prices. **4.50,** Talk: Good and Evil in the World. **5.20,** German Lesson. **5.50,** Weather. **6.0,** News. **6.15,** Time Signal. **6.30,** Review of Politics for the Past Month. **7.0,** Time Signal from the Town Hall. **7.1,** Programme by Per Kruntzon. **7.10,** Organ Recital by Oscar Ringberg, relayed from Maribo Cathedral: Pièce héroique (Franck); Second Choral in B Minor (Franck). **7.40,** Progress—One-Act Play (St. John Ervine), translated by Alfred Wilken. **8.10,** Duets by Anna Hagen and Edith Schmidt. **8.30,** Illustrated Talk: How a Sound Film is made. **9.0,** News. **9.15,** Mandoline Concert: Spanish March (Albert); Overture (Cimarosa); Entracte Music (Bohlmann); Barcarolle (Cotogni); Valse grazioso (Henriques); Intermezzo, Frauenther Porzellan-Püppchen (Lincke); Waltz, Traumideale (Fucik). **10.0** (approx.), Close Down.

CORK.—See **Dublin.**

DANZIG.—See **Heilsberg.**

DRESDEN.—See **Leipzig.**

DUBLIN.—See **Athlone.**

FECAMP

223 metres; 10 kW.—**6.0** to **7.0 p.m.,** Programme in English by the I.B.C. Announcers: R. Chene and B. McNab. **6.0,**

Concert for Torquay Listeners: Violin and Orchestral Music; Orchestra: Selection from Véronique (Messager); Violin Solos: (a) Kashmiri Love Song (Woodforde-Finden), (b) Because (d'Hardelot), (c) Hindu Song (Rimsky-Korsakov), (d) The Song of Songs (Moya); Orchestra: Wedding of the Winds (Hall). **6.30,** Concert for Weymouth Listeners: Orchestral and Vocal Concert; Orchestra: Britannia Selection (Humphries); Songs: (a) Devonshire Cream and Cider (Sanderson), (b) A Rovin' (Terry), (c) Up from Somerset (Sanderson), (d) Glorious Devon (German), (e) Rio Grande (Harris), (f) The Sea Road (Haydn Wood). **10.0** till Close Down. Programme in English by the I.B.C. **10.0,** Dance Music. **11.0,** Music by a Symphony Orchestra: Dance of the Hours (Ponchielli); Christmas Tree Waltz (Rebikow); Moment Musical (Schubert); Liebestraum (Liszt); Overture, Hansel and Gretel (Humperdinck); Carnival of the Animals (Saint-Saëns); Orientale (Cui); Song without Words (Tchaikovsky). **11.30,** Sea Shanties: At Santa Barbara (Kennedy Russell); A-rovin' (Terry); The Drunken Sailor (Terry); Rio Grande (Harris); Four jolly Sailormen (German); Shenandoah (Terry); Orchestra: Britannia Medley (Humphries). **12 Midnight,** Variety Concert: Mandoline Band: Waltz, The Blue Danube (Strauss); Song: The Hiker's Song (Longstaffe); Cornet Solo: The Rosary (Nevin); Song: The Old Inns of England (La Touche); Pianoforte Solo: Favourite Tunes of the Moment (Meryl); Mandoline Band: Tesoro Mio (Becucci). **12.30 a.m. (Saturday),** Vocal Duets and Mandoline Solos: Mandoline Solo: Czardas (Monti); Vocal Duets: (a) In an Old World Garden (Pepper), (b) I ain't gonna tell (Strachan), (c) When you've gone (Werner); Looking for love (McHugh); Mandoline Solo: Mandolinata (de Pietro); Vocal Duets: (a) She can't make up her mind (Castling), (b) Now I'm in love (Shapiro). **1.0.** Music by a Hawaiian Band: Bye-bye Blues; Somewhere in old Wyoming (Lesser); Old New England Moon; My Bluebird was caught in the Rain (Creamer); Nobody cares if I'm blue; Go home and tell your Mother (McHugh); O Donna Clara (Petershursky); With my Guitar and you (Snyder). **1.30,** Songs: The Thrill is gone; The Dancing Lesson; Sweet and lovely; Blue Moon in the Sky; My Sweet-tooth say I wanna; You're blasé; I don't know why; To-day I feel so happy. **2.0,** Dance Music. **2.57,** I.B.C. Goodnight Melody. **3.0** (approx.), Close Down.

FLENSBURG.—See **Hamburg.**

FLORENCE.—See **Turin.**

FRANKFURT

259 metres; 17 kW; and **CASSEL, 245.9 metres. 6.10 p.m.,** Time, Programme Announcements, Weather and Economic Notes. **6.15,** See **Stuttgart. 6.40,** A Parish Council Meeting in the Odenwald. **7.0,** See **Stuttgart. 8.20,** Concert by the Station Orchestra, conducted by Reinhold Merten. Soloists: Erich Kraack (Viola), Justus Gelfius (Flute), and Erich Kahn (Pianoforte): Overture, Rübezahl (Weber); Andante tranquillo and Allegro from Undine, Op. 167, for Flute and Pianoforte (Reinecke); Märchenbilder, Op. 113, for Viola and Pianoforte (Schumann); Overture, To the Story of the Lovely Melusina (Mendelssohn). **9.0,** Time, News, Weather and Sports Results. **9.20** till Close Down, See **Stuttgart. 11.0** (approx.), Close Down.

FREDRIKSSTAD.—See **Oslo.**

FREIBURG.—See **Stuttgart.**

GENEVA.—See **Radio-Suisse Romande.**

GENOA.—See **Turin.**

GLEIWITZ.—See **Breslau.**

GOTEBORG.—See **Stockholm.**

GRAZ.—See **Vienna.**

HAMAR.—See **Oslo.**

HAMBURG

Call ha (in Morse), 372 metres; 1.5 kW. Relayed by **Bremen, 269.8 metres; Flensburg, 227.4 metres; Hanover, 566 metres;** and **Kiel, 232.2 metres.**—**4.30 p.m.,** Talk: Trade Possibilities in Abyssinia. **5.5,** Contralto and Viola da Gamba Recital by Ilse Ihme and Ludwig Fassbaender: Compositions of Ludwig Fassbaender: Cycle of Sea Shanties for Viola da Gamba and Contralto Voice; Giacona in G Minor from Suite No. 6; Songs for Contralto and Viola da Gamba: (a) Schnee, (b) Der Tanz der Götter, (c) Sonnenuntergang, (d) Die junge Mutter; Viola da Gamba Solos: (a) Dance in D, (b) Allegro vivace in B Minor; Songs for Contralto and Viola da Gamba: (a) Der Mey ist do, (b) Er lauscht einem Voegelin. **5.50,** Exchange and Market Prices. **6.0,** Talk: Co-operation between Employer and Employed in the Crisis. **6.25,** Weather Forecast. **6.30,** Paul Alverdes reads from his own Works. **7.0,** Miniatures in Saxon Dialect—VI. Rudi Bach (Recitations) and Paul Gümmer (Songs): Im Tal der Freude (Otto Erich Hartleben); Am Bett des Kindes (B. von Münchhausen); Weisser Flieder (B. von Münchhausen); Der alte Herr (Paul Gräner); Grüne Zeit (Lulu v. Strauss u. Torney); Sommer (Lulu v. Strauss u. Torney); Harz (Riccarda Huch); Königin (Hermann Löns); Der Kuckuck (Paul Gräner); Ein herbstlich Lied zu zweien (Gerit Engelke); Das hat uns der Südwest getan (Gorch Fock); Lied der Tag (Georg v. d. Wring); Dorfnacht (Christoph Flaskamp); Two Songs from the Cycle, Die Kritik des Herzens (Albert Barkhausen). **8.0,** The other Kleist—Radio Sequence (Alfred Mühr). **9.0,** Time, Weather, Announcements, Sports Notes, and Police Report. **9.20,** See **Berlin (Witzleben). 9.35,** Concert from the Alster Pavilion.

HANOVER.—See **Hamburg.**

HEILSBERG

276.5 metres; 60 kW; and **DANZIG, 453.2 metres.**—**12.5 p.m.,** Gramophone Concert of Popular Music. In the interval at **12.20,** Announcements. **1.30,** Sponsored Programme with Gramophone Records. **2.0,** Exchange and Market Prices. **2.30,** Programme for Children. **3.0,** Talk for Women: Woman as an Artist. **3.30,** Concert by the Little Orag Orchestra, conducted by Eugen Wilcken: Overture, Idomeneo (Mozart); Rhapsody, Op. 33 (Elukhen); Miniature Ballet, Papillette (Ewing); Extase und Berceuse (Bizet); Selection from Lucia di Lammermoor (Donizetti); Gipsy Idyll (Percy); Overture, La Belle Hélène (Offenbach). **4.45,** Talk: The Country Continuation Schools. **5.15,** Market Prices. **5.20,** Ice Report. **5.30,** Chamber Music: Folk Songs of Neighbouring Lands for Soprano, Baritone, Lute, Violin and Flute. **6.0,** Programme of East Prussian Folk Songs, Recitations and Songs to the Lute, by the Station Choir and Orchestra, and Soloists: Hermann Kowski, Max Weber, Kurt Wernicke. **6.55,** Weather and News. **7.0,** Talk by Kurt Sell: What they are talking about in America, relayed from America. **7.15,** Dialogue: How to listen to Orchestral Music, with Illustrations from the Eroica Symphony (Beethoven) by the Konigsberg Opera House Orchestra, conducted by Erich Seidler. **8.25** (from **Danzig**), Detachement Korfes—Radio Play of the Napoleonic Wars (Georg von der Vring). **9.25,** Weather, News and Sports Notes.

HILVERSUM

Announced **HUIZEN, 296.1 metres;** 20 kW (7 kW up to **4.40 p.m.**).—Programme of the Christian Radio Society (N.C.R.V.). **10.40 a.m.,** Trio Concert: Overture, The Italian Girl in Algiers (Rossini); Waltz, Phiie de Diamants (Waldteufel); Musikalische Seifenblasen (Urbach); Potpourri of Offenbach Music (Urbach) on Gramophone Records; Selection from Mireilla (Gounod); Pas des Fleurs (Delibes); Babillage (Gillet). **11.40,** Police Notes. **11.55,** Melodious Memories (arr. Hermann Finck), on Gramophone Records. **12.10,** Organ Recital. **12.55,** Trio Concert (contd.): Overture, Raymond (Thomas); Slav Idyll (Ackermans); Fantasia on Ieder-Bela Music (Moreno); Selection from La Bohème (Puccini). **1.30,** Programme to be announced. **2.10,** Reading. **2.40,** Talk for the Housewife. **3.10,** Concert. **4.40,** Talk on Botany. **5.10,** Talk for the Amateur Photographer. **5.40,** Agricultural Talk. **6.10,** Talk on Gardening. **6.40,** Literary Programme. **7.10,** Police Notes. **7.25,** Talk. **7.40,** Concert by the Amsterdam Symphony Orchestra, conducted by M. de Haas. Prince Eitel Friedrich March (Blankenburg); Selection from The Gipsy Princess (Kalman); Overture, Im Reiche des Indra (Lincke); Liebesfeier (Weingartner). **8.10,** Accordion Duets: March song, Musik muss sein (May); Er was eens een musicus (Swarz); March Potpourri (Verc). **9.25,** Concert (contd.): Selection from Manon Lescaut (Puccini-Tavan). **8.40,** Talk. **9.10,** Concert (contd.): Waltz, Frühlingsstimmen (Joh. Strauss); Mattinata (Leoncavallo). **9.25,** Accordion Duets: Overture, Orpheus in the Underworld (Offenbach); Streichholz-Wachtparade (Karl Wehle); Wien bleibt Wien (Schrammel). **9.40,** News. **9.50,** Concert (contd.): Selection from The Geisha (Jones); A Wedding Day in Lilliput (Translateur). **10.10,** Variety Music on Gramophone Records. **11.10** (approx.), Close Down.

HORBY.—See **Stockholm.**

HUIZEN

Announced **HILVERSUM, 1,875 metres;** 8.5 kW.—**11.40 a.m. to 3.40 p.m.,** Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.). **11.40 a.m.,** Time Signal. **11.41,** Concert by the Wireless Chamber Orchestra, conducted by Nico Gerharz. **1.40 p.m.,** Talk. **2.10,** Concert by the Wireless Orchestra, conducted by Nico Treep, with Gramophone Interludes. **3.40 to 7.40,** Programme of the Workers' Radio Society (V.A.R.A.). **3.40,** Concert by De Flierefluiters, conducted by Hugo de Groot. **4.30,** Programme for Children. **5.10,** Concert by De Notenkrakers, conducted by D. Wins: Selection from The Arabian Nights (Joh. Strauss); Czardas, Mariska (Lehár); Two Songs (Komzák); Selection from A Kiss in Spring (Kálmán); Mon Napoli (Volpatti); Adieu (Tosti); Song (Reinhardt); March, Wien bleibt Wien (Schrammel). **5.50,** A Gramophone Record. **5.55,** Organ Recital by C. Steyn. **6.20,** Talk on Russia. **6.40,** Concert by De Flierefluiters, conducted by Hugo de Groot. Soloist: L. Fuld (Songs). Immer so weiter (Borchmann); The Old Kitchen Kettle (Woods); Im Gasthaus, Zum Goldenen Sterne (Rötter); O, wie schön ist ein Feiertag (Stolz); Pagan Moon (Burke); Tantz du auch so gern wie ich (Rosen); Hungarian Medley (Debroy Somers); Gramophone Records; Yo Yo (Nelson); In Heidelberg hab' ich mein Glück gefunden (Krauss); I'll never have to dream again (Newman); All for the Love of a Lady (Gay); Tanz mit im Walzerschritte (Weber); Delicous (Gershwin); Melody (May). **7.40 to 10.40,** Programme of the Liberal Protestant Radio Society (V.P.R.O.). **7.40,** Religious Address. **8.10,** Organ Recital by E. A. Vos: Variations on Mein Junges Leben hat ein End (Sweelinck); Ciaconna in D Minor (Pachelbel); Jesu meine Freude (Walther); Fantasia and Fugue in C Minor (Bach); Prelude and Fugue in E Minor (Bach); Adagio (Bach); Concerto in G (Vivaldi-Bach). In the interval at **8.40,** Talk. **9.40,** Religious Report. **9.45,** News Bulletin. **9.55,** Recitations. **10.25,** Gramophone Records. **10.40,** V.A.R.A. Programme: Popular Music on Gramophone Records. **11.40** (approx.), Close Down.

INNSBRUCK.—See **Vienna.**

KALUNDBORG.—See **Copenhagen.**

KATOWICE

408 metres; 16 kW.—**3.5 p.m.,** Popular Music on Gramophone Records. **3.25,** See **Warsaw. 6.0,** Talk. **6.15,** Announcements and Light Music on Gramophone Records. **6.25,** Sports Notes. **6.30,** See **Warsaw. 10.0,** The Letter Box in French.

KIEL.—See **Hamburg.**

KLAGENFURT.—See **Vienna.**

KOSICE.—See **Prague.**

LAHTI

1,796 metres; 40 kW.; and **HELSINKI, 368.1 metres.**—**6.0 p.m.,** Concert by the Radio Orchestra, conducted by Erkki Litke, relayed from **Helsinki.** Soloist: Hans Gruszka (Flute): Fingal's Cave (Mendelssohn); Minuet from the Symphony in E Sharp (Mozart); Ballet Music from Rosamund (Schubert); Flute Solo: Scène de ballet (Sibelius); Three Sacred Pieces (Ranta); Finnish Melodies (Kangas). **7.0,** Recitations. **7.20,** Variety Music on Gramophone Records, relayed from **Helsinki. 7.45,** News in Finnish. **8.0,** News in Swedish.

LANGENBERG

473 metres; 60 kW.—**12 Noon,** Concert conducted by Eysoldt: March, Ungarische Porte (Morena); Overture, Lurline (Wallace); Selection from Lohengrin (Wagner); Slav Dances Nos. 2 and 5 (Dvorák); Intermezzo from Naila (Delibes-Bopper); Black Eyes (Ferraris); Flemish Sketches (Brusselmanns); Waltz, Secrets of the Adige (Carena); Selection from The Maid of the Black Forest (Jessel). In the interval at **1.0 p.m.,** News. **1.30,** Sponsored Programme with Gramophone Records. **2.30,** Economic Notes and Time. **2.50,** Handwork for Children. **3.20,** Talks for Young People: (a) Travelling as a Cabin Boy to the Pampas of Chile, (b) I learn Chinese. **4.0,** See **Munich. 5.20,** English Conversation. **5.45,** Weather, Time, Economic Notes and Sports Results. **6.0,** Discussion: Employees' Insurance. **6.50,** News. **7.0,** Talk by Kurt G. Sell: What People are talking about in America, relayed from America. **7.15,** Max and Moritz—a Radio Sequence. Symphonic Suite, Max and Moritz (Mraczek), by the Station Orchestra, conducted by Buschkötter; Scenes and Prose from the Works of Enlenberg, Wilhelm Busch, Mark Twain, Karl Ettlinger, Erich Kästner, Ludwig Thoma, Franz Molnar, Hasse-Zetterström, Josef Winckler, and others. **9.10,** News and Sports Notes. **9.30,** Serenade and Dance Music, conducted by Eysoldt. **11.0** (approx.), Close Down.

LAUSANNE.—See **Radio-Suisse Romande.**

LEIPZIG

389.6 metres; 120 kW; and **DRESDEN, 319 metres.**—**11.0 a.m.,** Orchestral Concert. In the interval at **12 Noon,** News, Weather, Snow Report and Time. **1.0 p.m.,** Exchange Rates. **1.30,** Art Report. **2.15,** Talk for the Country Woman. **2.35,** Economic Notes. **3.0 to 3.15,** Natural History Talk. **3.30,** Concert by the Dresden Philharmonic Orchestra. Soloist: Edeltraut Eiben (Pianoforte). Overture, Meeres estille und Glückliche Fahrt (Mendelssohn); Concerto for Pianoforte and Orchestra (Hollstein); Frühlingsreigen (Schjelderup). **4.30,** Book Review. **4.50,** Economic Notes, Weather and Time. **5.0,** Radio Report from a Carnival Novelty Industry. **5.25,** English Lesson. **5.50,** Programme to be announced. **6.0,** Dance Music. **7.0,** Readings from Two German Folk Books. **7.45,** Symphony No. 4 in E Flat (Bruckner), by the Dresden Municipal Orchestra, conducted by Fritz Busch. **8.50,** Talk by Kurt G. Sell: What People are talking about in America (on Gramophone Records). **9.5,** News. **9.15** (approx.), Popular Music on Gramophone Records. **11.0** (approx.), Close Down.

LINZ.—See **Vienna.**

LJUBLJANA

574.7 metres; 2.5 kW.—**6.0 p.m.,** French Lesson. **6.30,** Topical Talk. **7.0,** See **Vienna. 9.0,** Time, News and Light Music on Gramophone Records.

LWOW

381 metres; 16 kW.—**6.0 p.m.,** Talk. **6.15,** Miscellaneous Items. **6.30,** See **Warsaw. 10.0,** Everybody Dances—a Musical Programme by Celina Nahlik. **11.0** (approx.), Close Down.

LYONS

LA DOUA, 465.8 metres; 1.5 kW. **7.30 p.m.,** Radio Gazette for Lyons and the South East. **8.30,** Popular Vocal and Instrumental Concert. After the Concert, News Bulletin.

MADRID

ARANJUEZ (EAQ), 30.43 metres; 20 kW.—**11.30 p.m.,** Variety Concert. **10.45,** Radio Chronicle. **11.0,** Variety Concert (contd.). **11.35,** Answers to Correspondence. **11.40,** Spanish-American Talk. **11.45,** Light Music. **12 Midnight** (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 424.3 metres; 2 kW.—**7.0 p.m.,** Chimes, Exchange Quotations and Programme of Musical Novelties. **7.15,** Medical Talk, followed by Programme by Ramon Gomez de la Serna. **8.15,** News Bulletin. **8.30 to 9.30,** Interval. **9.30,** Chimes and Time Signal and Humorous Talk. **9.45** (approx.), Concert by the Station Symphony Orchestra, conducted by Felipe Briones: Arlesienne Suite No. 1 (Bizet); Symphony in F, No. 8 (Beethoven); Dance from Iradit (Briones); Pavane (Fauré); In the Steppes of Central Asia (Borodin); Military March (Schubert). **11.45,** News Bulletin and Programme Announcements for Listeners Abroad. **12 Midnight,** Chimes and Close Down.

MALMO.—See **Stockholm.**

MILAN.—See **Turin.**

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—**5.15 p.m.,** See **Prague. 6.30,** See **Bratislava. 7.0,** See **Prague. 9.15** (approx.), Close Down.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—**4.0 p.m.,** News. **4.10,** Announcements. **4.30,** Concert. **5.30,** Symphony Concert, relayed from the Large Hall of the Conservatoire, or a Pianoforte Recital relayed from the Small Hall of the Conservatoire. **8.0,** Review of the Week and Answers to Correspondents in English. **8.55,** Time. **9.5,** Press Review.

MOTALA.—See **Stockholm.**

MUHLACKER.—See **Stuttgart.**

MUNICH

533 metres; 60 kW. Relayed by **Augsburg** and **Kaiserslautern, 560 metres;** and **Nürnberg, 239 metres.**—**3.0 p.m.,** Concert of Chamber Music of the Italian Baroque Period with Introductory Talk by Dr. Ludwig Gerhesser. Church Sonata in G for Violin, 'Cello and Harpsichord (dall'Abaco); Sonata for Harpsichord (Scarlatti); Recitative and Aria for Soprano, 'Cello and Basso continuo (Gualli); Aria for Soprano, Violin and Continuo (Scarlatti); Church Sonata in B Minor, Op. 5, No. 4, for Two Violins, 'Cello and Harpsichord (Corelli). **3.35,** Talk: The Education of Girls. **4.0,** Orchestral Concert, conducted by Erich Kloss. Overture, Russian and Ludmilla (Glinka); Suite from As you like it (Wetzler); Abendlied (Armandola); Puppe und Kobold (Armandola); Scenes from Madame Butterfly (Puccini); Waltz (Waldteufel); Melody (Moszkowsky); Waltz (Moszkowsky); Zigeuneska (Monti); Hungarian Ballet, Etelka (Ailbont). **5.15,** Economic Report. **5.35,** Talk: The Mystics. **5.55,** Time, Weather, Agricultural Notes and Snow Report. **6.5,** Poets and the Poor—Talk with Recitations by Dr. Fritz Gerathewohl. **6.25,** Soprano and Baritone Recital of Mozart Music: Duet from The Magic Flute; Aria from Don Giovanni; Duet from Figaro. **6.45,** Talk on Photography. **7.5,** Popular Symphony Concert by the Munich Philharmonic Orchestra, conducted by Adolf Memmerich, relayed from the Tonhalle: Overture, Le Carnaval romain (Berlioz); Till Eulenspiegel's Merry Pranks, Op. 28 (Richard Strauss); Intermezzo from The Arabian Nights (Joh. Strauss); Perpetuum mobile (Joh. Strauss); Waltz, Tales from the Vienna Woods (Joh. Strauss); Overture, Orpheus in the Underworld (Offenbach). **8.35,** Reading: The Major's Story (G. K. Chesterton). **9.5,** Franconian Suite, for Tenor Solo, Mixed Choir and Small Orchestra (Karl Schäfer), by the Station Chamber Orchestra, the Station Choir and Otto Hierl (Tenor). **9.20,** Time, Weather, News, Sports Notes, Snow and Road Report.

NAPLES.—See **Rome.**

NOTODDEN.—See **Oslo.**

OSLO

1,083 metres; 60 kW. Relayed by **Fredrikstad, 365.8 metres; Hamar, 574.7 metres; Notodden, 447.1 metres; Porsgrund, 463.2 metres;** and **Rjukan, 447.1 metres.**—**4.0 p.m.,** Variety Music on Gramophone Records. **4.40,** Programme for Schools. **5.0,** French Lesson. **5.30,** Agricultural Report. **6.0,** Announcements, Weather and News. **7.0,** Time Signal. **7.1,** Symphony Concert by the Philharmonic Orchestra, relayed from the Logen Hall. Conductor: Odd Grüner Hegge. Symphony, No. 2 (Sibelius); Overture, The Flying Dutchman (Wagner); Selection from

The Dusk of the Gods (Wagner); Entry of the Gods into Valhalla, from The Rhinegold (Wagner). **8.40,** Weather and News. **9.0,** Topical Talk. **9.15,** Talk. **9.45** (approx.), Close Down.

OSTERSUND.—See **Stockholm.**

PALERMO

537.6 metres; 3 kW.—**7.0 p.m.,** Announcements, Tourist Report, Agricultural Notes, Report of the Royal Geographical Society, and Giornale Radio. **7.20,** Orchestral Music. In the interval at **7.30,** Time and News. **7.45,** Carmen—Opera in Four Acts (Bizet) on Gramophone Records. In the intervals, Talk on Venice and Literary Notes. **9.55,** News.

PARIS

EIFFEL TOWER, Call FLE, 1,445.8 metres; 13 kW. Time Signals (on **2,650 metres**) at **9.26 a.m.** and **10.26 p.m.** (Preliminary and 6-dot Signals).—**5.45 p.m.,** Le Journal Parlé. **7.20,** Weather Report. **7.30,** Wagner Concert by the Radio Orchestra, conducted by Edouard Flament; Soloist: M. Brunian (Clarinet); Overture, Die Feen; Adagio for Clarinet; Selection from Das Liebesverbot; Albumblatt; Forest Murmurs from Siegfried; Träume. **8.15,** Musical and Literary Programme for Young People. **9.0** (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—**6.45 p.m.,** Journal Parlé. **7.0,** Gramophone Concert of Popular Music. **7.45,** Topical Talk. **8.0,** Talk on Music. **8.15,** Interval. **8.30,** Concert by the Station Symphony Orchestra: Overture, La Princesse jaune (Saint-Saëns); Divertissement, Zorrica (Bousquet); Scenes antiques (Larrieu); Symphonic Interlude, Printemps; Trot de cavalerie (Rubinstein); Sicilian Rhapsody (Silver); Bourrée fantasque (Chabrier); Three Dances (Février-Longeray); March bohémienne (Filipucci). **10.30,** News.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—**6.45 a.m.,** Physical Culture. **7.30,** Weather and Physical Culture (contd.). **7.45,** Gramophone Records: Tzigane (Ravel); Humorous Scenes (Leonard). **8.0,** Press Review and Weather. **12 Noon,** Jewish Address. **12.30 p.m.,** Concert by the Krettly Orchestra: Andante and Finale from Symphony La Reine (Haydn); Serenade from L'amant jaloux (Grétry); Overture, Egmont (Beethoven); Aria from Figaro (Mozart); Invitation to the Waltz (Weber-Berlioz); 'Cello Solo: Sur le lac (Godard); Träume (Wagner); Poem (Liszt); La Boîte à joujoux (Debussy); Selection from Les Erynnies (Massenet). In the intervals at **1.0,** Exchange, News and Weather, and at **1.30,** Exchange. **2.0,** Exchange and Announcements. **3.45,** Exchange and Market Prices. **4.30,** Elementary English Lesson. **6.10,** Agricultural Talk. **6.30,** Review of New Books. **6.50,** Talk on Social Insurance. **7.0,** Talk: The Financial Programme of the Forthcoming International Conference. **7.20,** Concert by the Krettly Orchestra: Invocation à Enterpe (Dyck); Je t'aime (Waldteufel); Buda-Pest (Léoni); Bagatelle (Daubé); Entr'acte Printanier (Manière); Marche Bohemienne (Filipucci). **7.45,** Commercial Prices and News. **8.0,** Readings from the Works of Rabelais. **8.30,** News and Weather. **8.40,** Gastronomic Review. **8.45,** Symphony Concert, conducted by Eugène Bigot. Soloist: Roger Boulmé ('Cello). Fourth Symphony (Beethoven); Concerto for 'Cello and Orchestra (Schumann); Suite in D (d'Indy); Popular Russian Songs (arr. Liador); Spanish Overture (Widor). In the interval at **9.15,** Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW. Relayed by **W8XK** on **48.86 metres** and **25.27 metres.**—**9.0 p.m.,** Talk by Dr. Emlyn Jones. **9.10,** Business News. **9.15,** S.A.I. Musicale—Carnegie Tech Chapter. **9.30,** Weather Report. **9.32,** Market Reports. **9.45,** Pianoforte Interlude. **9.50,** David Lawrence Dispatch. **9.55,** KDKA Artist Bulletin. **9.58,** Programme Announcements. **10.0,** Muskingum College Music Clubs. **10.15,** Programme to be announced. **10.30 to 11.15, New York** Relay. **10.30,** The Singing Lady. **10.45,** Little Orphan Annie. **11.0,** Our Daily Food by George Rector and Judge Gordon. **11.15,** Time Signal. **11.16,** Weather Report. **11.17,** Teaberry Sport Review. **11.22,** Press News Reeler. **11.27,** Strange Facts. **11.29,** Temperature Report. **11.30,** KDKA Orchestra. **11.45 to 3.15 a.m. (Saturday), New York** Relay. **11.45,** To-day's News by Lowell Thomas. **12 Midnight,** Pepsodent Amos 'n' Andy. **12.15 a.m.,** Hilda Burke (Soprano). **12.30,** Five Star Theatre by Charlie Chan. **1.0,** Nestle's Programme. **1.30,** Time Signal and Adventures in Health. **1.45,** Howard Thurston, the Magician. **2.0,** The First Nighter. **2.30,** Armour Programme. **3.0,** Alice Joy. **3.15,** Westinghouse Pioneers. **3.30,** Bridge School of the Air by E. Hall Downes. **3.45,** Bradley Kincaid. **4.0,** Time Signal. **4.1,** Teaberry Sport Review. **4.11,** Temperature Report. **4.12,** Weather Report. **4.13,** KDKA Artist Bulletin. **4.15,** Press Last Minute News Flashes. **4.20;** Cora Williams Hines (Contralto). **4.30,** Henry Halstead and his Californians. **5.0,** Cotton Club Orchestra, from **New York.** **5.30,** Time Signal and Good-night.

PORSGRUND.—See **Oslo.**

FEB. 17th FRIDAY *continued*

PRAGUE

488.6 metres; 120 kW.—**3.10 p.m.,** See **Brno. 3.55,** Talk: Famous Religious Figures in Czech History. **4.5,** Chamber Music by the Ondricek Quartet: Divertissement for Violin, Viola, and 'Cello, Op. 28 (Jirak); Trio in E Flat for Violin, Viola, and 'Cello, Op. 3 (Beethoven). **5.5,** Agricultural Market Prices. **5.15,** Talk for Workers. **5.25,** German Transmission: News, Legal Talk, and Talk on Sports. **5.50,** Relay from the National Theatre. **6.30,** See **Bratislava. 7.0,** Concert by the Smetana Vocal Society. **8.0,** Time Signal. **8.1,** Concert by the Station Orchestra, conducted by Otakar Jeremias: Soloist: P. Vladigerov (Pianoforte); Overture, Rinaldo (Handel); Second Pianoforte Concerto, Op. 22 (Vladigerov). **9.0,** Time Signal. **9.1,** News Bulletin. **9.15** (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; **LAUSANNE, 680 metres;** and **GENEVA, 760 metres.**—**5.30** (from **Geneva**), Talk: The Brain-worker and the Crisis. **6.0** (from **Lausanne**), Weather, News, and Announcements. **6.30** (from **Lausanne**), Talk for Apprentices: Professional Book-keeping. **7.0** (from **Geneva**), Variety Programme by the Broadcasting Serenaders. **8.0** (from **Lausanne**), Quartet Concert; Milly Berber (Violin), Erich Schaette (Violin), Carl Weymar (Viola), and Hermann Hoenes ('Cello): Quartet in C (Mozart); Quartet in A, Op. 18, No. 5 (Beethoven). **9.0,** News Bulletin and Weather Forecast. **9.10** (from **Geneva**), Talk: The Work of the League of Nations. **9.25** (approx.), Close Down.

RIGA

525 metres; 15 kW.—**6.15 p.m.,** Symphony Concert, conducted by J. Medins: Overture, In Autumn (Grieg); Symphony No. 6 in C (Atterberg). **7.0,** News. **7.20,** Symphony Concert (contd.): Violin and Viola Concerto (Mozart); Suite No. 3 (Medins). In an interval at **8.0,** Weather and News. **8.30,** Light Music. **9.30** (approx.), Close Down.

RJUKAN.—See **Oslo.**

ROME

Call 1RO, 441 metres; 50 kW. Relayed by **Naples, 319 metres;** and **2RO, 25.4 metres.**—**7.0 a.m.,** Gymnastics. **7.15 to 7.30,** Giornale Radio and Announcements. **11.30,** Weather and Light Music on Gramophone Records. **12 Noon,** Time and Announcements. **12.2 to 1.15 p.m.,** Orchestral Concert. In the interval from **12.30 to 12.45,** Giornale Radio and Exchange. **3.0,** Pianoforte Recital by Arthur Rubinstein. **6.0,** Giornale Radio. **6.10** (from **Naples**), Shipping and Sports Notes. **6.15,** Agricultural Notes. Announcements and Light Music on Gramophone Records. **7.0,** Time and Announcements. **7.5,** Report of the International Institute of Agriculture (in Italian, French, English, German and Spanish). **7.30,** Talk, Sports Notes and Tourist Report. **7.45,** Variety Concert. Soloists: Ofelia Parisini (Soprano), Alfredo Sernicoli (Tenor), Guglielmo Castello (Baritone), and Ugo Ajello ('Cello). Extracts from Le maschere—Opera (Mascagni); Dance from Prince Igor (Borodin); Return to the Past—One-Act Comedy (Hugues Delorme); 'Cello Solos: (a) Adagio cantabile (Tartini), (b) Minuet (Becker), (c) Serenade (Cassado), (d) Tarantella (Forrino); Extracts from Francesca da Rimini—Opera (Zandonai); After the Concert, Dance Music and News.

SALZBURG.—See **Vienna.**

SCHENECTADY

GENERAL ELECTRIC COMPANY, WGY, 379.5 metres; 50 kW. Relayed at intervals by **W2XAF** on **31.48 metres,** and by **W2XAD** on **19.56 metres.**—**7.30 p.m. to 12.15 a.m. (Saturday), New York** Relay. **7.30,** Three Shades of Blue—Male Trio. **7.45,** Muted Strings. **8.0,** Echoes of Erin. **8.15,** Famous Loves. **12 Midnight,** Donald Novis (Tenor). **12.15 a.m.,** Stock Reports. **12.30 to 1.30, New York** Relay. **12.30,** Three Keys. **12.45,** The Goldbergs. **1.0,** Cities Service Concert. **1.30,** WGY Farm Forum. **2.0,** Musical Programme from **New York.** **2.30,** Pond's Programme and Programme Resumé, from **New York.**

SCHWEIZERISCHER LANDESSENDER

BEROMUNSTER, 459 metres; 60 kW; **BASLE, 244.1 metres;** and **BERNE, 245.9 metres.**—**9.20 a.m.,** Musical Programme for Schools. **9.50 to 11.28,** Interval. **11.28,** Time Signal from Neuchâtel Observatory. **11.30,** Weather and News. **11.40,** Concert by the Little Radio Orchestra. **12.35 p.m.,** Weather and Exchange. **12.35 to 2.30,** Interval. **2.30** (from **Basle**), Concert by the Radio Quartet. **3.30** (from **Basle**), Hallo, Hallo, Radio-Basle!—Programme for Children. **4.0,** Gramophone Concert for Young People. **4.30 to 5.30,** Interval. **5.30** (from **Berne**), An Interview with Count Westarp, the German Politician. **6.0,** Time, Weather, Market Prices, Tourist Report and Winter Sports Notes. **6.20** (from **Berne**), Josef Reinhart reads from his Book, Helden und Helfer. **6.45,** Concert by the Radio Orchestra. **7.15** (from **Zürich**), Recital by Stefy Geier (Violinist), relayed from the Limmathaus. Peter Speiser at the Pianoforte. **8.0,** Concert by the Radio Orchestra. **8.30,** Weather and News. **8.40** (from **Zürich**), Concert by Marek Weber and his Orchestra, relayed from the Café Sihlporte. **9.15** (approx.), Close Down.

SOTTENS.—See **Radio-Suisse Romande.**

STOCKHOLM

Cal. SASA, 436 metres; 55 kW. Relayed by **Boden, 1,229.5 metres; Goteborg, 322 metres; Horby, 257 metres; Motala, 1,348 metres; Ostersund, 770 metres;** and **Sundsvall, 542 metres.**—**4.5 p.m.,** Concert by a Concertina Quartet. **4.30,** The Practical Corner. **4.45,** Light Music on Gramophone Records. **5.45,** Talk. **6.15,** Weather and News. **6.30,** Radio Play (Eyvind Johnson). **7.40,** Harpsichord Recital by Margit Ahlenius-Theorell: Three Inventions in E, B Flat, and B Minor (Bach); Sonata in A (Paradisi); Gavotte (Martini); Musette and Tambourin (Dauvin). **8.0,** Sonata in F, Op. 6, for 'Cello and Pianoforte (R. Strauss), by Roman Dukstulsky and Märta Ohlson. **8.25,** Talk on Foreign Politics. **8.45,** Weather and News. **9.0,** Orchestral Concert: Soloist: Martin Blomquist (Songs). **10.0** (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—**11.30 a.m.,** Gramophone Concert of Light Music. **12.45 p.m.,** News. **1.0,** Time and Exchange. **1.5,** Gramophone Records of Light Music. **2.0 to 5.0,** Interval. **5.0,** Orchestral Concert, conducted by M. Roskam. Soloists: M. Roskam ('Cello), and M. Grégoire (Violin). March, Sambre et Meuse (Planquette); La valse bleue (Margis); Serenade (Toselli); Grossmütterchen (Langer); The Phantom Brigade (Myddleton); Parlez-moi d'amour (Lenoir); 'Cello Solo: Berceuse de Jocelyn (Godard); Violin Solo: Le canari (Poliakin); La Paloma (Yradier); Waltz, The Blue Danube (Joh. Strauss); Serenade from Les Millions d'Arlequin (Drigo); Overture, Poet and Peasant (Suppé). **6.0,** Concert of Chamber Music by the Station Trio, relayed from **Lille (265.4 metres). 7.0,** Topical Talk in German. **7.15,** Talk in French: The Rhine—an International River. **7.30,** Time and News. **7.45,** Lottery Results. **8.0,** Schubert Concert, conducted by Maurice de Villers. Soloist: Alfred Haas (Baritone). Overture, Rosamund; Winterreise; Andante from the Fifth Symphony; Military March. **9.0,** Concert relayed from the Conservatoire, Toulouse. Conductor: M. Aymé Kune. Soloists: Mlle. Aline van Barentzen (Pianoforte), and M. Henri Barouk ('Cello). **11.0** (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW; and **FREIBURG, 570 metres.**—**11.0 a.m.,** Orchestral Concert on Gramophone Records: The Nutcracker Suite (Tchaikowsky); Nocturne No. 2 (Debussy); The Fire Bird (Stravinsky); Entr'acte Music from Khovanstchina (Mussorgsky); Two Pieces from Carmen (Bizet). **11.45,** Gertrud Bindernagel Song Recital on Gramophone Records: Aria from Oberon (Weber); Death of Isolde, from Tristan and Isolde (Wagner). In an interval, Symphonic Dances (Grieg). **12.15 p.m.,** Time, Weather, News and Programme Announcements. **12.30,** Concert from **Langenberg. 1.0,** Sponsored Programme. **1.30,** English Lesson. **3.35,** Talk: Life in the Sahara. **4.0,** See **Munich. 4.45,** Time, Weather and Agricultural Notes. **4.55** (from **Mannheim**), Talk: The Spelling Primer throughout the Ages. **5.20,** Talk: The Place of Eugenics in Welfare Work. **5.45,** Talk: My Sunday Walking Tour. **6.0,** Time and News. **6.15** (from **Freiburg**), Choral Recital of Folk Songs with Lute Accompaniment. **6.45,** Talk: What People are talking about in America, relayed from America. **7.0,** Nathan the Wise—Lyric Drama (Lessing). **8.20,** Concert by the Stuttgart Philharmonic Orchestra, conducted by Emil Kahn: Suite mignonne, for Two Flutes and Small Orchestra (Sibelius); Andante from the Second Symphony (Gustav Mahler); Styrian Dances, Op. 35 (Pachernegg). **9.0,** Time, Weather, News and Programme Announcements. **9.20,** General Report on the International Ski-Championships. **9.50,** Concert of Dance Music by the Stuttgart Philharmonic Orchestra, conducted by Harry Risch, with Song Refrains by Hermann Schmid (Tenor). In an interval at **10.30,** Report of the Sixth Stuttgart Six Day Races. **11.0** (approx.), Close Down.

SUNDSVALL.—See **Stockholm.**

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—**6.0 p.m.,** News Bulletin. **6.15,** Opera Music. Selection from (a) Faust (Gounod), (b) Mephistopheles (Boito), (c) Aida (Verdi). **6.30,** Ballet Music from Sylvia (Delibes). **6.45,** Accordion Music. **7.0,** Tourist Talk. **7.15,** Racing Results, Market Prices and News. **7.25,** Local News Bulletin. **7.30,** Light Music. **7.45,** Military Music. **8.0,** Songs from Sound Films. **8.15,** Operetta Music: Melodies from (a) La belle Hélène (Offenbach), and (b) Banditenstreiche (Suppé). **8.30,** Quintet in A, Die Forelle (Schubert). **9.0,** Concert by a Viennese Orchestra. **10.0,** Operetta Music: Waltz from The Land of Smiles (Lehár); Melody from La Basoche (Messager); Air from The Merry Widow (Lehár). **10.15,** North African News. **10.30,** Concert for Listeners in Morocco. Selection from El amor brujo (Falla); Mendiant d'amour (Goublier); Liebestreud (Kreisler); Air from The Huguenots (Meyerbeer); Violin Solo: Spanish Symphony (Lalo); March from Moïse (Rossini). **11.0,** Dance Music. **11.15,** Spanish Song Recital. **11.30,** Programme in English by the I.B.C. French Accordion Concert. Polka (Marceau); La Java (Vacher); Night at Panama (Oberfeld); Tomorrow en fête (Clairon); If I have cried for you (Buxenil); The Waltz, The Bather (Cayla); If I knew how to love you (Raiter). **12 Midnight,** Weather Forecast and Announcements. **12.15 a.m. (Saturday),** Orchestral Music. **12.30** (approx.), Close Down.

TRIESTE

247.7 metres; 10 kW.—**3.0 to 6.30 p.m.,** See **Turin. 6.30,** Orchestral Concert relayed from the Caffè Dante. **7.0** till Close Down, See **Turin.**

TRONDHEIM.—See **Oslo.**

TURIN

273.7 metres; 7 kW. Relayed by **Milan, 331.5 metres; Genoa, 312.8 metres;** and **Florence, 500.8 metres.**—**3.0 p.m.,** See **Rome. 5.35,** Giornale Radio and Agricultural and Dopolavoro Notes. **6.0,** Variety Music on Gramophone Records. In the intervals at **6.20,** Giornale Radio, and at **6.30,** Time Signal, Announcements and Report of the Royal Geographical Society. **7.0,** Giornale Radio and Weather Forecast, followed by Light Music on Gramophone Records. In an interval at **7.30,** Sports Talk. **8.0,** Stravinsky Concert, conducted by the Composer, with the Station Choir. Suite from Petroushka; Symphony of Psalms; Fireworks; Suite from The Firebird. **10.0,** Giornale Radio.

VATICAN CITY

13.84 metres (Morning) and **50.26 metres (Evening);** 10 kW.—**10.0 to 10.15 a.m.,** Religious Information in German. **7.0 to 7.15 p.m.,** Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by **Graz, 352.1 metres); Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 246 metres;** and **Salzburg, 218 metres.**—**3.45 p.m.,** Sound Film Music on Gramophone Records. **4.45,** Programme to be announced. **5.0,** Tourist Report. **5.15,** Talk: Winter Sports First-aid Service in the Viennese Alps. **5.30,** Sports Report. **5.40,** Talk: Charles the Great and the Development of Europe. **6.5,** Time, Weather, and Programme Announcements. **6.15,** Carnival Memories—Concert by the Tantenhayn Quartet: Polonaise from Wiener Walzer (Bayer); Waltz, Faschingskinder (Ziehrer); Polka Mazurka, Postscriptum (Millöcker); Bluebeard Quadrille (Offenbach-Jos. Strauss); Hesperus-Ländler (Jos. Strauss); Clog Polka (Drescher); Waltz, Accelerationen (Joh. Strauss); Storm Gallop (Komzak). **7.5,** Seventh Orchestral Concert of the Gesellschaft der Musikfreunde, conducted by Dr. Hermann Scherchen; The Viennese Symphony Orchestra, the Small Choir of the Vienna State Opera House, and Soloists; Russian Dance Suite with Song Refrains; Les Noces villageoises (Stravinsky); Wandlungen—Chamber Oratorio to Verse by Hölderlin (Hauer); Symphonic Poem, Pelleas und Melisande, Op. 5 (Schönberg). In an interval at **8.5** (approx.), News, Weather, and Announcements. **9.15,** Roads Report. **9.25,** Dance Music by Jean Litwins and his Syncopators and the Los Pamperos Tango Band from the Café de Paris.

WARSAW

1,411 metres; 120 kW.—**10.58 a.m.,** Time Signal and Bugle Call from the Tower of St. Mary's Church, Cracow. **11.5,** Programme Announcements. **11.10,** Light Music on Gramophone Records. **12.20, p.m.,** Weather Forecast. **12.25 to 2.10,** Interval. **2.10,** Announcements. **2.25,** Aviation and Anti-gas Drill. **2.30,** Naval and Colonial Report. **2.35,** Talk. **2.50,** Popular Music on Gramophone Records. **3.25,** Review of Periodicals. **3.40,** Biological Talk. **4.0,** Concert by a Police Band: Overture, La Dame Blanche (Boieldieu); Intermezzo, Flirtation (Steck); Selection from Faust (Gounod); Gavotte-Pizzicato (Drigo); Entr'acte from Carmen (Bizet); Oberek, Chasse-Neige (Lewandowski); March (Rupprecht). In the interval, Announcements. **4.55,** Programme Announcements. **5.0,** Light Music, relayed from the Café Ziemianska. In the interval, Topical News. **5.50,** Ski-ing Report from **Cracow (312.8 metres). 6.0,** Miscellaneous Items. **6.20,** Agricultural Press Review, relayed from **Wilno (563 metres). 6.30,** Talk: Chicago in 1933. **6.45,** Radio Journal. **7.0,** Talk on Music. **7.15,** Concert by the Warsaw Philharmonic Orchestra, conducted by J. Ehrlich. Soloist: Carlo Zecchi (Pianoforte). Symphony No. 9 in C Minor (Haydn); Pianoforte Concerto No. 21, Op. 467; Two Etudes (Vogel); Ballet Suite from The Golden Age (Szostak ewicz). In the interval, Literary Talk. **9.40,** Sports Notes. **9.45,** Radio Journal. **9.55,** Aviation Weather Report and Police Notes. **10.0,** Dance Music from the Oaza Dance Hall. **11.0** (approx.), Close Down.

ZURICH.—See **Schweizerischer Landessender.**

SATURDAY

FEBRUARY THE EIGHTEENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL Instrumental concert. Welsh interlude. Pianoforte recital. "150 Years Ago." feature programme by L. W. A. Baily. Orchestral concert.

LONDON REGIONAL Mr. S. P. B. Mais: "The Week-end." Instrumental concert. Military Band concert. "Princess of Kensington." light opera programme.

MIDLAND REGIONAL Orchestral programme. Light music. "Etc., Etc.," One Inconsequential Thing After Another.

NORTH REGIONAL Running commentary on the Rugby League Football Match, Leeds *v.* Salford. "A Frivolous Hour," Wit and Nonsense in Music and Literature. The Leeds Symphony Concert. A recital of songs from Nyasaland.

WEST REGIONAL Mr. Herbert M. Vaughan: "Little England Beyond Wales." Orchestral concert from National Museum of Wales. Light music. Welsh interlude.

SCOTTISH REGIONAL Eye-witness account of the Third Round Tie in the Scottish Cup. "Glasgow. A Day in the Life of the Second City." by Robins Millar. Mr. George Blake: "The Week in Scotland."

BELFAST Flute Band concert. Alexander Riddell: "Ulster Regiments." Orchestral concert relayed from the Wellington Hall. Vaudeville programme.

ABROAD

BRUSSELS (No. 2) The Symphony Orchestra, conducted by J. Kumps.

STRASBOURG Orchestral concert, relayed from Mulhouse-Wittenheim.

ATHLONE

413 metres; 60 kW.; and **CORK, 224.4 metres.**—**1.30 to 2.0 p.m.**, Time Signal, Weather Report, Stock Report, and Light Music on Gramophone Records. **7.20**, News Bulletin. **7.30**, Time Signal. **7.31**, Talk on Dogs. **7.45**, Gaelic Talk. **8.0**, Concert by the Station Orchestra, conducted by Philip Martin. **8.30**, Uilleann Pipe Music. **8.45**, Song Recital. **9.0**, The Station Orchestra. **9.30**, Harp Solos by Annie Fagan. **9.50**, Songs by Mary Crowley (Mezzo-Soprano). **10.0**, The Station Orchestra. **10.30**, Time Signal, News, Weather Report, and Close Down.

BARCELONA

RADIO-BARCELONA, Call EAJ1, 348.8 metres; 8 kW. **6.0 p.m.**, Programme for Children. **7.0**, Request Gramophone Records. **7.30**, Exchange Quotations, and Catalan Grammar Lesson. **8.0**, Light Music on Gramophone Records and News. **9.0**, Chimes, Weather, Market Prices and Exchange Quotations. **9.5**, Concert by the Station Orchestra. Bohemian March (Filipucci); Selection from El Solo de Trompo (Serrano); Waltz, Pomona (Waldteufel); Andalusian Serenade Rodriguez (Roses); Interlude (Chansson); Overture, Le Roi l'a dit (Delibes). **10.0**, Talk in Catalan. **10.15**, Guitar Solos: Courante (Bach); Etude (Sor); Romance (Schumann); Dance (Granados); Sevilla (Albeniz). **10.40**, Concert by the Station Orchestra: Scènes pittoresques (Massenet); La Troyenne (Massenet); Dance (Coppola). **11.0** (in the interval), News. **11.30**, Gramophone Records of Popular Music. **12 Midnight** (approx.), Close Down.

BARI

269.8 metres; 20 kW.—**7.0 p.m.**, Agricultural Notes, Tourist Talk, Dopolavoro Announcements and Sports Notes. **7.20**, Giornale Radio and Weather. **7.30**, Time Signal and Announcements. **7.35**, Military Band Concert, conducted by M. Salvatore Rubino. Symphony No. 2 (Beethoven); Selection from Rigoletto (Verdi); Descriptive Piece (Westerhout); Spanish Suite in Three Movements, La Feria (Lacôme); Waltz, Idillio (Valentini). In the intervals: Two Talks. **9.30**, Popular Music on Gramophone Records. **9.55**, News Bulletin.

BASLE.—See **Schweizerischer Landessender.**

BELGRADE

430.4 metres; 2.8 kW. **3.30 p.m.**, Concert by the Radio Orchestra: Overture, Czar and Carpenter (Lortzing); Selection from Rigoletto (Verdi); Suite, Ein Sommernachtsfest (Siede); Waltz, Moonlight on the Alter (Fetras). **5.55**, Time and Programme Announcements. **6.0**, Popular Music on Gramophone Records. **6.30**, Talk. **7.0**, 'Cello and Pianoforte Recital: Sonata Op. 6 in F (R. Strauss); Elegiac Song, Op. 18, No. 3 (Siegl); Du bist die Ruh (Schubert); Gipsy Dance (Jeral). **7.40**, Concert by the Serbian-Hebrew Choral Society. **8.25**, Pianoforte Recital by Prof. Petar Dunicic: Prelude, Cordoba and Seguidillas (Albeniz); Petite danse (Turina); Allegretto and Epilogue from Escenas romanticas (Granados); Spanish Dance, No. 5 (Granados); Fire Dance (Falla). **9.0**, Recital of Yugoslav Songs by Mile Milutinovic. **9.30**, News, followed by Cigány Music from the Potcosacka Zadruga Restaurant.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—**10.55 a.m.**, Weather for Farmers. **10.57** (from **Leipzig**), Programme in Commemoration of the Death of Luther, relayed from the Municipal Church, **Wittenberg**: Choral: Mitten wir im Leben sind; Choral: Mit Fried' und Freud' fahr ich dahin; Choral: Das Silber durchs Feuer siebenmal bewähret from Ach Gott vom Himmel sieh darein; Choral: Es war ein wunderlicher Krieg, from Christ lag in Todesbanden. **11.55**, Nauen Time Signal. **12.35 p.m.**, News Bulletin. **1.0**, Gramophone Concert of Popular Music, relayed from **Berlin (Witzleben)**. **2.0**, Programme for Children. **2.30**, Weather and Exchange. **2.45**, Talk on Friedrich Griese and Hans Christoph Kaergel. **3.0**, Talk: The Indo-Germanic Peoples. **3.30**, See **Hamburg**. **4.10**, Topical Review. **5.0**, Song Recital by Fred Dribsen (Bass-Baritone): Schubert: Liebesbotschaft, Kriegers, Ahnung, Frühlingssehnsucht, Ständchen, Aufenthalt, Abschied. **5.30**, Talk: Famous German Painters—Wilhelm Leibl. **5.55**, Weather and Announcements. **6.0**, Talk: Religion and Life. **6.30**, A Poem. **6.35**, String Quartet in E Flat for two Violins, Viola, and 'Cello (Dittersdorf). **7.0**, Parodies in Word and Music by Hans Reimann and Others. **7.45**, Concert of Old and New Dances by the Chamber Orchestra, conducted by Otto Urack. **9.15**, Weather, News, and Sports Notes. **9.45**, Weather for Shipping, followed by Dance Music from **Berlin (Witzleben)**. **11.30** (approx.), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—**3.0 p.m.**, Concert by the Berlin Wireless Orchestra, conducted by Bruno Seidler-Winkler: Overture, Der Templer und die Jüdin (Marschner, arr. Hans Pfitzner); Concert Piece in F Minor, Op. 79, for Pianoforte and Orchestra (Weber); Serenade in D, Op. 49 (Felix Draeseke); Traumspiel-Suite (von Reznicek). **4.0**, Sports Notes. **4.10**, Concert (contd.): Contrast for Orchestra, Op. 21, Bianco e Nero (Bossi); Pianoforte Concerto in A, No. 2 (Liszt); Symphonic Poem, Romeo and Juliet (Tchaikovsky). **5.0**, Talk with Three Young Missionaries. **5.30**, Reading of Prose. **5.55**, The Witzleben Station informs its Listeners. . . **6.0**, Topical Talk. **6.10**, A Visit to the Berlin Voluntary Social Service Depôt. **6.30**, Recital of Folk Song. **6.45**, A Programme arranged by Rence Christian. **8.0**, The State Opera House Ball, relayed from the Kroll-Festsälen, with a Gala Performance in the Theatre Hall: The Conductors, Soloists, Choir, and Orchestra of the State Opera House. **9.30**, Weather, News, and Sports Notes, followed by Dance Music from the Advertising Ball in the Marmorsaal Zoo. **10.30**, State Opera House Ball (contd.): Concert, conducted by Leo Blech, Erich Kleibet, and Otto Klemperer, relayed from the Festsaal. After the Concert: Ballet under the direction of Laban, with Dance Music in the Intervals. **12 Midnight**, Close Down.

BERNE.—See **Schweizerischer Landessender.**

BEROMUNSTER. — See **Schweizerischer Landessender.**

BODEN.—See **Stockholm.**

BODO.—See **Oslo.**

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—**7.30**, Radio Journal. **7.40**, Sports Notes. **7.45**, Request Gramophone Records. **8.0**, News, Market Prices, and Lottery Results. **8.5**, English Lesson. **8.20**, News and Weather. **8.30**, Gramophone Concert of Light Music. **9.0**, La Menace—Comedy in Four Acts (P. Frondaie).

BRATISLAVA

279 metres; 14 kW.—**3.10 p.m.**, Concert of Light Music by the Station Orchestra, conducted by J. Odcházel. **4.10**, Talk on Bavaria. **4.25**, Popular Music on Gramophone Records. **4.45**, Marionette Play. **5.45**, Talk for Housewives. **6.0**, See **Prague**. **9.15**, See **Moravska-Ostrava**. **10.30** (approx.), Close Down.

BREMEN.—See **Hamburg.**

BRESLAU

325 metres; 60 kW.; and **GLEIWITZ, 253 metres.**—**12.5 p.m.**, Weather Forecast. **12.7**, Popular Music on Gramophone Records. **12.45**, Time, Weather, News, and Exchange Quotations. **1.5**, Popular Music on Gramophone Records. **1.45**, Sponsored Programme with Gramophone Records. **2.10**, Agricultural Prices. **2.40**, Weekly Film Review. **3.0**, Talk: What sort of Houses shall we live in? **3.20**, Review of New Books on Music. **3.35**, Concert from **Hamburg**. **4.30**, Anecdotes about Wagner. **4.55**, Review of the Week's Talks and Reference Literature. **5.25**, Light Music on Gramophone Records. **6.30**, Weather for Farmers, followed by Topical Report. **7.5**, See **Frankfurt**. **9.30**, Time, Weather, News, Sports Notes, and Programme Announcements. **10.0**, Dance Music relayed from **Berlin (Witzleben)**. **12 Midnight**, Close Down.

BRNO

342 metres; 35 kW.—**5.25 p.m.**, German Transmission: News and Songs from Operettas and Gramophone Records of Light Music. **6.0**, See **Prague**. **9.15**, See **Moravská-Ostrava**. **10.30** (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—**12 Noon**, Concert by the Little Radio Orchestra, conducted by M. Leemans: Overture, Anacreon (Cherubini); Melody from Amica (Mascagni); Asturias (Albeniz); Selection from La Bohème (Puccini); Violin Solo: Ronde des lutins (Bazzini); The Kiss Waltz (Burke); Foxtrot-Bolero, Speakeasy (Gensler); Selection from Pas sur la Bouche (Yvain). **1.0 p.m.**, Le Journal Parlé. **1.10**, Concert, relayed from the Grand Hotel, Antwerp: Petite Suite, Jeux d'enfants (Bizet); Violin Solo: Légende (Delcroix); A Potpourri of Old French Airs—Au bon vieux temps (Monton); Tango, Plegaria (Bianci); 1933 Potpourri (Dostal). **5.0**, Concert by the Radio Orchestra, conducted by M. Franz André: Burlesque (Fischer); Carnival Overture (Leuschner); Three Dances (Pachernegg); Selection from Gretna Green (Guirand); Potpourri of Walloon Airs (Wangermee); Divertissement on Russian Melodies (Raband). **6.0**, Talk: The Cinema and the Theatre. **7.15**, Song Recital by Mme. Tourovetz: Ungeduld (Schubert); Liebesbotschaft (Schubert); Three Songs (Schumann): Mainacht (Brahms); Ständchen (Brahms); Soir (Fauré); Clair de lune (Fauré); Chanson triste (Duparc); Fantoches (Debussy). **6.45**, Pictures from an Exhibition (Mussorgsky-Ravel) on Gramophone Records. **7.15**, Talk: Politics in the Belgian Congo. **7.30**, Review of International Affairs. **8.0**, Orchestral Concert, conducted by M. Franz André: Hungarian March (Berlioz); The Fourteenth Rhapsody (Liszt); Humorous Scenes (Leonard). **8.30**, Talk on George Virrès, the Belgian Author. **8.45**, Concert (contd.): A Zeppelin Tour round the World (Mannecke); Wine, Woman and Song (Strauss). **9.0**, To let Furnished—Comedy in One Act (d'Hervilliez). **9.25**, Concert (contd): Negro Rhapsody (Foulenc); Potpourri of Popular Russian Melodies; Popular Greek Songs; Latest Musical Successes. **10.0**, Le Journal Parlé. **10.10**, Concert, relayed from the Ancienne Belgique.

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW.—Programme in Flemish. **12 Noon**, Concert, relayed from the Grand Hotel, Antwerp. Conductor: André Felleman. Soloists: Louis Gebruers (Flute) and Carlo Franck (Songs). Jazz March (De Smetsky); Potpourri (Golwyn); Zigeuner, du hast mein Herz gestohlen (Grothe); Ein Sängerfahrt nach Wien (Silving); Melancholia for Flute (Benoit); Foxtrot, Chopin-Liszt-Mendelssohn (Horatio Nicholls). **1.0 p.m.**, Journal Parlé. **1.10**, Concert by the Small Station Orchestra, conducted by Pierre Leemans. Soloist: M. Wizy (Violin). **5.0**, Gramophone Records, with Commentary: In the Steppes of Central Asia (Borodin); Scheherazade (Rimsky-Korsakov). **6.0**, Gramophone Records: Airs d'Auvergne (Debrons); Chromatic March (Courtade). **6.15**, Talk: Haphazard Wanderings with a Rucksack through Romantic Western Germany. **6.30**, Concert by the Small Station Orchestra, conducted by P. Leemans. Soloist: M. Doudiez (Pianoforte). La caravane passe (Letorey); Legend No. 10 (Dvorak); A Mediterranean Cruise (Jalovicz); Habanera (Turina); English Fantasia, Britelodia (Humphries); Three Waltzes for Pianoforte (Van Hoof); March funèbre d'un hanneton (Dubois). **7.15**, Talk: An Analogy between the Flemish and Walloon Dialects. **7.30**, Film Notes. **8.0**, Concert by the Symphony Orchestra, conducted by Jean Kumps. Soloist: Maurice Dambois ('Cello); Ballet, Daphnis et Chloé (Ravel); 'Cello Concerto (Haydn). **8.45**, H. Simons reads from his own Works. **9.0**, Orchestral Concert (contd.): Spanish Caprice (Rimsky-Korsakov); Songs; In Memoriam (Devreese); Songs; Rhapsody on Two Flemish Songs (de Boeck). **10.0**, Journal Parlé. **10.10**, Gramophone Concert: Selection from Die Bajadere (Kalman); Concert Paraphrase on Rigoletto (Verdi-Liszt); Slav Rhapsody (Friedmann). **10.30**, Concert, relayed from the Moulin Hall, Antwerp. Conductor: Paul Morcaux. **12 Midnight** (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—**4.0 p.m.**, Orchestral Concert. **5.0**, News and Time. **5.10**, Talk. **5.25**, Orchestral Concert. **6.0**, Talk on Roumania. **6.40**, Light Music on Gramophone Records. **7.0**, Orchestral Concert: March (Ketelbey); Selection from Tip Toes (Gershwin); Serenade (Breee). **7.30**, Talk. **7.45**, Pianoforte Recital. **8.15**, Orchestral Concert (contd.): Lullaby (Fucik); Roumanian Potpourri (Giron). **8.45**, News.

BUDAPEST

550 metres; 18.5 kW. Also relayed on **840 metres** from **5.45** (approx.) till Close Down.—**4.0 p.m.**, Concert of Operetta Music by the Opera House Orchestra, conducted by Bela Nagypal: Overture, Prince Boh (Huska); Waltz (Andran); Selection from Les Cloches de Corneville (Planquette); Waltz (Ziegler); Song (Lincke); Song (Vineze); Melody from Eva (Lehár). **5.15**, Answers to Correspondence. **5.45**, Choral Concert. **6.30**, Programme by Michael Földi. **7.0**, Dramatic Programme, followed by Cigány Music from the Café Emke. **10.45**, Dance Music from the Hotel Royal. **12 Midnight** (approx.), Close Down.

CASSEL.—See **Frankfurt.**

COPENHAGEN

281 metres; 0.75 kW.; and **KALUNDBORG, 1,153 metres**; 7.5 kW. **11.0 a.m.**, Time Signal and Chimes from the Town Hall. **11.2**, String Ensemble Concert, conducted by A. Bendix, relayed from the Wivex Restaurant. **1.0 to 1.30**, Interval. **1.30**, Gramophone Concert: Maria Olczewska: Nur wer die Sehnsucht kennt (Tchaikovsky); Heinrich Schumann: Am Rhein (Humperdinck); Enrico Caruso: Tarantella (de Cresrenzo); Yehudi Menuhin: La capricciosa (Ries); Jussi Björling: Slut dina ögon (Ammandt); Marta Eggerth and Max Meusin: Ich könnte jetzt zu Ihnen sagen, I love you (Abraham); Maurice Elwin: Sweethearts for Ever (Friend and Cesar); Arthur Lally: Round the Marble Arch (Gay and Butler); Trio Rita: Om du var min (Axelsson). **2.0**, Programme for Children. **2.30**, Concert by the Station Orchestra, conducted by Emil Reesen: Overture, Halka (Moniuszko); Waltz, The Swimmer (Lanner); Selection from Die toten Augen d'Albert); Selection from Coppelia (Delibes); Overture, Der Opernball (Heuberger); Selection from Die geschiedene Frau (Fall); Schön Rosmarin (Kreisler); After Refrain (Kreisler); Preludium (Järnefelt); Cracovienne fantastique (Paderevski). In the interval at **3.15** (approx.), Reading. **3.40**, Exchange and Fish Markets. **4.50**, Talk in English: A Visit to a Kaffir Kraal. **5.20**, Elementary French Lesson. **5.50**, Weather. **6.0**, News. **6.15**, Time Signal. **6.30**, Discussion on Discipline in Schools. **7.0**, Time Signal from the Town Hall. **7.1**, Dance Music by the Station Orchestra, conducted by Lanny Gröndahl: March, Alte Kameraden (Teike); Waltz (Ivanovici); Pepita Polka (Lumbye); Mazurka, Liebeszauber (E. Strauss); Waltz, La resignation (Lumbye); Quadrille (Lumbye); Schottische, La petite Tonkinoise (Schotte); Waltz, La plus belle (Waldteufel); Gallop, Baller man los (Jensen). **8.0**, Reading in Finnish. **8.20**, Sonata in C Minor, Op. 30, No. 2, for Violin and Pianoforte (Beethoven). **8.50**, Dellinger's Songs to the Lute by Alf Gildsig. **9.10**, News. **9.20**, Pianoforte Recital by Viktor Fischer, followed by Dance Music by the Tommy Boston Orchestra, relayed from the Lodberg Restaurant. In the interval at **11.0**, Time and Chimes from the Town Hall. **11.15** (approx.), Close Down.

CORK.—See **Athlone.**

CRACOW

312.8 metres; 1.5 kW.—**6.15 p.m.**, Review of Foreign Politics. **6.30 to 10.0**, See **Warsaw**. **10.0**, Orchestral Concert of Light Music, relayed from the Pavilion Restaurant. In the interval at **10.30**, News for Members of the

Polish Polar Expedition. **11.0,** Chimes from the Tower of St. Mary's Church.

DANZIG.—See **Heilsberg.**

DRESDEN.—See **Leipzig.**

DUBLIN.—See **Athlone.**

FECAMP

223 metres; 10 kW. **6.0 to 7.0 p.m.,** Programme in English by the I.B.C.: C. Danvers Walker, R. Cehen, and B. McNab announcing. **6.0,** Concert for Thanet Listeners: I've got one Arm around Mary; Sweet Caroline; Sally; You've got to laugh at Care; Fall in and follow the Band; The Coster's Wedding; The Kid next door; The Wink of the Old Glad Eye. **6.30,** Concert for Folkestone Listeners: Organ Solos; Sylvan Scenes (Fletcher); The Sacred Hour (Ketelbey); Glow Worm Idyll (Lincke); If you were the only Girl in the World; In a Japanese Garden (Higgs); Il Bacio (Arditi); Popular Melodies. **11.0** till Close Down, Programme in English by the I.B.C. **11.0,** International Broadcasting Club Concert: Sweet Muchacha; What would happen to me; Let's all sing like the Birdies sing; I don't want to go to bed. **11.30,** Concert of Light Music: March, General Mulcahy (Brase); Piano Selection, The Cat and the Fiddle (Kern); Song, I give my Heart, from The Dubarry (Millöcker); Accordion Duet, Irish Jigs; Song, Everybody does it in Hawaii; Sam, pick up tha' Musket; Orchestral Selection from The Gondoliers (Sullivan). **12 Midnight,** Variety: Duet, Crystal gazing; Song, It's a great big Shame; O Zuyder Zee; Sketch, The Schoolmaster; The Laughing Lover; Duet, Moonshine; Song, 'Arf a Pint of Ale. **12.30 a.m. (Sunday),** Songs: Body and Soul; If I had a Talking Picture of You; Sometimes I'm Happy; I'm a Dreamer; Selection from The Desert Song (Romberg); Nobody but you; One alone, from The Desert Song (Romberg); Your Mother and Mine (Edwards). **1.0,** Instrumental Duets: Organ and Violin, Because (d'Hardelot); Organ and Xylophone, Way Down South (Myddleton); Organ and Violin, A Perfect Day (Jacobs Bond); Piano and Organ, Marigold (Mayerl); Organ and Xylophone, The Whistler and his Dog (Pryor); Organ and Violin, I'll Sing thee Songs of Araby (Clay); Piano and Organ, Clockwork (Mayerl); Organ and Violin, Drink to me only with thine Eyes (Calcott). **1.30,** Popular Music: Pianoforte Solo, Magic Notes; Exactly like you; I like to do Things for you; My Lover; More than you know; Swingin' in a Hammock; On the Sunny Side of the Street; Piano Duet, When the Circus comes to Town. **2.0,** Dance Music. **2.57,** I.B.C. Good-night Melody. **3.0** (approx.), Close Down.

FLENSBURG.—See **Hamburg.**

FLORENCE.—See **Turin.**

FRANKFURT

259 metres; 17 kW.; and **CASSEL, 245.9 metres.—6.15 p.m.,** Time, Programme Announcements, Weather, and Economic Notes. **6.30,** Reading: Schnee (Thomas Mann). **7.5,** Concert, relayed from the Town Hall, Coblenz; The Station Orchestra, conducted by Hans Rosband and Reinhold Merten; Soloists: Elice Illiard (Soprano), Willy Domgraf - Fassbaender (Baritone), Ernst Arnold (Tenor), Helmut Krüger, Hermann Schaufuss, and others. **9.30,** Time, News, Weather, and Sports Notes. **9.45,** See **Stuttgart. 10.30,** Dance Music, relayed from **London. 12 Midnight,** Close Down.

FREDRIKSSTAD.—See **Oslo.**

FREIBURG.—See **Stuttgart.**

GENEVA.—See **Radio-Suisse Romande.**

GENOA.—See **Turin.**

GLEIWITZ.—See **Breslau.**

GOTEBORG.—See **Stockholm.**

GRAZ.—See **Vienna.**

HAMAR.—See **Oslo.**

HAMBURG

Call ha (in Morse). **372 metres;** 1.5 kW. Relayed by **Bremen, 269.8 metres; Flensburg 227.4 metres; Hanover, 566 metres;** and **Kiel, 232.2 metres.—3.30 p.m.,** Concert by the Hamburg Philharmonic Orchestra, conducted by José Eibenschütz: Overture, Phèdre (Massenet); Berceuse (Järnefeldt); Heiteres Spiel (Plüner); Intermezzo (Thiessen); Rhapsody (Lalo); Waltz Barcarolle, Wellenträume (Kripp); Overture, Morning, Noon and Night (Suppé). **4.30,** Talk: The Commercial Library in Hamburg, the oldest in Europe. **4.55,** True Sea Story of the Week. **5.5,** Variety Programme. **6.0,** Talk: Australia's Irrigation Problem. **6.25,** Weather Forecast. **6.30,** Hemmingstedt Historical Radio Drama in Dialect (Albert Mähl), with Music by Walter Bullerdick. The Station Chamber Orchestra and Male Voice Choir. **7.15,** Concert relayed from **Frankfurt. 9.0,** Time, Weather, Announcements, Sports Notes and Police Report. **9.20,** Topical Talk. **9.30,** Dance Music from **Berlin (Witzleben).** In an interval at **10.20,** Ice Report.

HANOVER.—See **Hamburg.**

HEILSBERG

276.5 metres; 60 kW; and **DANZIG, 453.2 metres—12.5 p.m.,** Gramophone Concert: March, Admiral Hölzendorff (Flessburg); The Week-end Cottage (Lewis) Ich such per sofort (Rust); Glückliche Reise (Künneke); Bitte, bitte, sei so nett (Künneke); Willst du mich begleiten (Nelson); Schenk mir dein Herz (Jessel); Schlösser, die im Monde liegen (Lincke); Küss mich (Kalman); Willst du nicht was Liebes mir sagen (Kalman); Freiheit (Laukien); Sag' Kamerad zu mir (Rust); Melody (Brown); Die verblichene Rose (Dalhort); Mein schönes Kind am Rhein (Eberle); So lang es schöne Mädchen gibt (Eberle); Achtung! Sie hören jetzt die Melody Gents (Goehr); Mir sein die Kaiserjäger (Mühlberger); Steinmetzmarsch (Bratfisch). In the interval at **12.20,** Announcements. **1.30,** Sponsored Programme on Gramophone Records. **2.0,** Exchange and Market Prices. **2.30** (from **Danzig**), Programme for Children. **3.0,** Concert from **Berlin (Witzleben). 4.30,** Reading: Elka und ihr Gefährte Elkus (Ungern-Sternberg). **5.0,** Programme Intelligence for the Coming Week. **5.10,** Programme Notes in Esperanto. **5.15,** Market Prices. **5.20,** Ice Report. **5.30,** International Market Report. **6.20,** Recital of Familiar Folk Songs for Soprano, Baritone and Lute. **6.55,** Weather and News. **7.5,** See **Frankfurt.** After the Programme: Weather, News and Sports Notes, followed by Dance Music from **Berlin (Witzleben). 10.30,** Dance Music from **London. 12 Midnight,** Close Down.

HILVERSUM

Announced **HUIZEN; 296.1 metres;** 20 kW. (7 kW. up to **4.40 p.m.**). Programme of the Catholic Radio Society (K.R.O.). **11.55 a.m.,** Concert by the K.R.O. Orchestra, conducted by J. Gerritsen: March (Blaauw); Overture, The Nuremberg Doll (Adam); The Kiss Waltz (Strauss); Selection from Fedora (Giordano); Polish National Dance (Scharwenka); Chinesische Märchenerzähler (Dreyer); Gramophone Records: Potpourri, From A to Z (Geiger); Waltz Potpourri (Southout); Serenade (Drdla); March Medley (Blankenburg). **1.25 to 1.40,** Interval. **1.40,** Programme for Young People. **2.10,** Programme for Children. **3.40,** Light Music on Gramophone Records. **4.10,** Concert by the Bel Canto Male Voice Double Quartet. **4.30,** Concert by the K.R.O. Boys, conducted by P. Lustenhouwer. Soloist: J. Mossel (Songs). **4.55,** Sports Talk. **5.10,** Choral Concert (contd.). **5.30,** Concert by the K.R.O. Boys (contd.). **6.0,** Press Review. **6.20,** Concert by the K.R.O. Boys (contd.). **6.50,** Legal Talk. **7.10,** Police Notes. **7.25,** Sports Talk. **7.40,** Concert by the K.R.O. Orchestra, conducted by M. van 't Wond. Soloist: J. Janssens (Songs). Overture, Frau Luna (Lincke); Selection from The Love Parade (Schertzinger); Selection from Vendetta (Ennem); Air from Rose Marie (Friml); Passione (Ranzata); Moonlight in Rio de Janeiro (Wertheim). **8.25,** News Bulletin. **8.30,** Concert (contd.): Overture, The Gipsy Baron (Joh. Strauss); Selection from Rose Marie (Friml). **8.55,** Organ Recital by A. Dreijssen: Selection from Kunihild (Kystler); Waltz in C Sharp Minor (Chopin); Waltz in D Flat (Chopin); Plantation Memories (Becker); Syncopation for the Organ (Perl); Melody (Barness); Serenade (Rachmanitnov); Gipsy Moon (Borganov); Scherzo. **9.25,** Talk. **9.40,** Concert by the Station Orchestra, conducted by M. van 't Wond. Soloist: J. Janssens (Songs). Potpourri (Dostal); Songs: (a) Song from Lilac Time (Schubert), (b) Song from Vendetta (Ennem), (c) Waltz from Les Saltimbanques (Ganne), (d) Romance from La Cigale et La Fourmi (Audran), (e) The Last Waltz (O. Strans); Sailors' Dance (Ebonet); Song Medley (Sluiter-Hoogeboom); Uncle Sam (Holzmann). **10.40,** News Bulletin. **10.45,** Popular Music on Gramophone Records. **11.40** (approx.), Close Down.

HORBY.—See **Stockholm.**

HUIZEN

Announced **HILVERSUM; 1,875 metres;** 8.5 kW.—**11.40 a.m.** till Close Down, Programme of the Workers' Radio Society (V.A.R.A.). **11.40,** Concert by De Notenkrakers, conducted by D. Wins. **1.55,** Variety Music on Gramophone Records. **2.30,** Sports Talk. **2.50,** Concert by a Balalaika Orchestra, conducted by I. Powarjev: Racoczy March; Fialka (Tschaikov). **3.0,** Song Recital by J. Smith. **3.10,** Variety Music on Gramophone Records. **3.20,** Balalaika Concert (contd.): Czardas No. 2 (Michiels); Andante cantabile (Tchaikovsky). **3.30,** Song Recital by J. Smith (contd.). **3.40,** Variety Music on Gramophone Records. **3.50,** Balalaika Concert (contd.): Russian Fantasia (Powarjev). **4.0,** Song Recital by J. Smith (contd.). **4.10,** Light Music on Gramophone Records. **4.20,** Talk. **4.40,** Concert by De Notenkrakers, conducted by D. Wins. **5.40,** Concert by De Wielewaal Choir, conducted by P. Tiggers. **6.10,** Organ Recital by C. Steyn: Ich will nicht wissen, wer du bist (Abraham); Dancing in the Dark (Schwartz); Was wär' ich ohne Euch (Lehár); Chanson (Bos); Dir sing' ich mein Lied (Lehár); That Night when Love was born (Bear). **6.40,** Programme to be announced. **7.10,** Violin Recital by Carla Rosen: Andante (Lalo); Malagueña (Sarasate); Chanson (Godard). **7.25,** S.O.S. Messages. **7.30,** Violin Recital (contd.): Melody (Tchaikovsky); Tango (Albéniz-Kreisler); Variations on a Theme by Corelli (Tartini-Kreisler). **7.40,** The Village Barber. **7.55,** Concert by De Fliedfluiters, conducted by Hugo de Groot. **8.25,** Address. **8.35,** Report of the Liberal Protestant Radio Society (V.P.R.O.). **8.40,** Variety Programme by De Fliedfluiters, conducted by Hugo de Groot; A. de Booy (Songs), The Four Serenaders, D. Wins (Pianoforte) and Gramophone Records. **10.40,** News Bulletin. **10.50,** Variety Music on Gramophone Records. **11.40** (approx.), Close Down.

INNSBRUCK.—See **Vienna.**

KALUNDBORG.—See **Copenhagen.**

KAUNAS

1,935 metres; 7 kW.—**6.30 p.m.,** Popular Concert. **7.10,** Talk. **7.30,** Dance Music. **8.30,** Sports Notes. **8.40,** Evening Concert. **9.30** (approx.), Close Down.

KIEL.—See **Hamburg.**

KLAGENFURT.—See **Vienna.**

KOSICE.—See **Prague.**

LAHTI

1,796 metres; 40 kW.; and **HELSINKI, 368.1 metres.—6.15 p.m.,** Concert by the Tampere Metropolitan Church Choir, conducted by Heikki Kuusniemi, relayed from **Tampere (560 metres). 7.15,** Concert by the Radio Orchestra. **7.45,** News in Finnish. **8.0,** News in Swedish. **8.15,** Dance Music from the Kämp Restaurant. **10.0** (approx.), Close Down.

LANGENBERG

473 metres; 60 kW.—**12 Noon,** Concert, conducted by Wolf: Overture, Fra Diavolo (Auber); Two Slav Dances (Dvorák); Selection from The Barber of Seville (Rossini); Ballet Suite from Giroflé-Girofla (Lecocq); Dolorosa (Lindgmann); Pierrot und Pierrettes Liebestod (Lindemann); Waltz, Wine, Woman and Song (Joh. Strauss); Overture, Der Göttergate (Lehár); Potpourri, Noten-Regen (Urbach); March Potpourri, Hurra, die Musik kommt (Zimmer). In the interval at **1.0 p.m.,** News. **1.35,** Popular Music on Gramophone Records. **2.30,** Economic Notes and Time. **2.50,** Programme for Children. **3.10,** Talk on Regensburg. **3.30,** English Reading. **4.0,** A Musical Journey—Concert. **5.20,** Talk for Women. **5.45,** Weather, Time, Economic Notes, and Sports Results. **6.0,** Talk: With German Settlers in South-West Africa. **6.20,** Topical Talk. **6.30,** Talk: German Landscape and German Art. **6.55,** News. **7.0 to 9.20,** Variety Programme. **7.0,** Dance Music by the Small Station Orchestra, conducted by Eysoldt. **7.30,** Kanzleibote Dr. Müller—Radio Play (Theo Rausch). **7.45,** Jazz on Gramophone Records. **8.0,** Songs and Verse. **8.20,** Love and Crime or All's Well that ends Well—Radio Play (Paul Schaaf). **8.55,** Concert of Light Music by the Station Orchestra, conducted by Eysoldt. **9.20,** News and Sports Notes. **9.50,** See **Stuttgart. 11.0,** Jazz Music. **12 Midnight,** Close Down.

LAUSANNE.—See **Radio-Suisse Romande.**

LEIPZIG

389.6 metres; 120 kW.; and **DRESDEN, 319 metres.—12.15 p.m.,** Waltzes on Gramophone Records, The Vienna Philharmonic Orchestra, conducted by Erich Kleiber: Waltz, Du und Du, from Die Fledermaus (Joh. Strauss); The Vienna Schrammel Quartet: Moonlight on the Alster (Fetras); Gitta Alpar: Dorfschwalben aus Oesterreich (Jos. Strauss); Dajos Bela and his Orchestra: Wiener Bürger (Ziehrer); Beim Ochsenwirt (Pokorny); Mon rêve (Waldteufel); Am Wörtesee (Koschat); Sobra las olas (Rosas); Zigeunerliebe (Translateur); The Berlin Philharmonic Orchestra, conducted by Wilhelm Grosz: Hofballtänze (Lanner); The Vienna Philharmonic Orchestra, conducted by Clemens Krauss: Waltz from The Arabian Nights (Joh. Strauss). Exchange Rates after the Concert. **1.0,** Wireless Notes. **1.30,** Programme for Children. **2.15,** Review of Periodicals. **2.45,** Economic Notes. **3.0 to 3.15,** Talk on Music. **3.30,** Concert from **Berlin (Witzleben). 5.0,** Talk: Young People and Romance. **5.30,** German for Germans. **5.50,** Topical Talk. **6.0,** Reading of Luther's Letter to Pope Leo X. **6.30,** Spanisches Liederspiel, Op. 74 (Schumann). Irmgard Genzel-Rochling (Soprano), Henriette Lehne (Contralto), Wilhelm Ulbricht (Tenor), and Philipp Göpelt (Bass). **7.5,** See **Frankfurt. 9.5,** News. **9.15** (approx.), Dance Music. **11.0** (approx.), Close Down.

LINZ.—See **Vienna.**

LJUBLJANA

574.7 metres; 2.5 kW.—**6.0 p.m.,** Talk on Sociology. **6.30,** Talk on the History of Philosophy. **7.0,** Tannhäuser—Opera (Wagner), on Gramophone Records. **9.0,** Time, News and Concert of Light Music.

LWOW

381 metres; 16 kW.—**6.10 p.m.,** Miscellaneous Items. **6.30** till Close Down, See **Warsaw. 11.0** (approx.), Close Down.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—**7.30 p.m.,** Radio Gazette for Lyons and the South-East. **8.30,** Surcouf—Operetta (Planquette), relayed from **Paris (Ecole Superiere) (447.1 metres).** After the Operetta, News Bulletin.

MADRID

ARANJUEZ, EAQ, 30.43 metres; 20 kW. Programme for Listeners in Europe, The Canary Islands, Guinea, and America. **6.0 p.m.,** Concert of Popular Music. **7.15,** Talk. **7.30,** Dance Music. **8.0 to 10.30,** Interval. **10.30,** Variety Concert. **10.45,** Radio Chronicle. **11.0,** Variety Concert (contd.). **11.30,** Talk, followed by Popular Music. **11.40,** Light Music. **12 Midnight** (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 424.3 metres; 2 kW.—**7.0 p.m.,** Chimes, Exchange Quotations and Request Gramophone Records. **7.30,** Talk on Co-operative Societies and Request Gramophone Records (contd.). **8.15,** News Bulletin. **8.30 to 9.0,** Interval. **9.0,** Linguaphone English Lesson. **9.30,** Chimes and Time Signal. **9.40** (approx.), A Musical Comedy. **11.45,** News Bulletin. **12 Midnight,** Chimes and Close Down.

MALMO.—See **Stockholm.**

MILAN.—See **Turin.**

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—**5.25 p.m.,** Concert by a Sokol Orchestra. **6.0,** See **Prague. 9.15,** Concert of Light Music by the Station Orchestra, conducted by J. Plicjta. **10.30** (approx.), Close Down.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—**4.0 p.m.,** News. **4.10,** Announcements. **4.30,** Concert. **5.30,** Concert of Light Music from the Radio Theatre. **8.0,** Talk in French: The Influence of the Press. **8.55,** Time. **9.5,** Press Review.

MOTALA.—See **Stockholm.**

MUHLACKER.—See **Stuttgart.**

MUNICH

533 metres; 60 kW. Relayed by **Augsburg** and **Kaiserslautern, 560 metres;** and **Nurnberg, 239 metres.—4.0 p.m.,** Orchestral Concert, conducted by Erich Kloss: Overture, Ten Maids and No Man (Suppé); Festival Music from Litumlei (Pottgiesser); Seven Pieces, Marionettes (Poldini); Waltz from The Carnival Fairy (Kálmán); Potpourri, Klänge aus Rumänien (Dauber); Amorettenreigen (Fucik); Serenata amorosa (Beece); A Box of Tin Soldiers (Siede). **5.15,** Vocational Talks for Girls. **5.45,** From the Old Chanson to the Song of To-day—a Journey through the Centuries (Rolf Ghatberg). **6.30,** Wireless Technical Hints. **7.0,** The Mikado—Operetta in Two Acts (Gilbert and Sullivan). After the Operetta, Dance Music by Max Textor and his Band. **9.20,** Time, Weather, News, and Sports Notes. **9.45,** Dance Music from **Stuttgart. 11.0** (approx.), Close Down.

NAPLES.—See **Rome.**

NOTODDEN.—See **Oslo.**

OSLO

1,083 metres; 60 kW. Relayed by **Fredriksstad, 365.8 metres; Hamar, 574.7 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres;** and **Rjukan, 447.1 metres.—3.15 p.m.,** Concert of Light Music, relayed from the Continental Hotel. **4.15,** Programme for Children. **5.15,** Song and Hardanger Fiddle Recital of Folk Music. **5.45,** Economic Talk. **6.0,** Announcements, Weather and News. **6.30,** Talk. **7.0,** Time Signal. **7.1,** Concert of Old and New Dances by the Station Orchestra, conducted by M. Hugo Kramm. **8.40,** Weather and News. **9.0,** Topical Talk. **9.15,** Readings. **9.45,** Dance Music by the Station Dance Orchestra, conducted by M. Schubert. **11.0** (approx.), Close Down.

OSTERSUND.—See **Stockholm.**

PALERMO

537.6 metres; 3 kW.—**7.0 p.m.,** Announcements, Tourist Report, Agricultural Notes and Giornale Radio. **7.20,** Popular Music on Gramophone Records. In the interval at **7.30,** Time and News. **7.45,** The Merry Widow—Operetta (Lehar). In the intervals, Book Review and Announcements. **9.55,** News.

PARIS

EIFFEL TOWER. Call FLE, 1,445.7 metres; 13 kW. Time Signals (on **2,650 metres**) at **9.26 a.m. and 10.26 p.m.** (Preliminary and 6-dot Signals.)—**5.45 p.m.,** Le Journal Parlé. **7.30,** Le chapeau de paille d'Italie—Vaudeville Comedy, with Songs by Eugène Labiche and Marc Michel. **9.0** (approx), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—**6.45 p.m.,** Journal Parlé. **7.0,** Concert. **8.0,** Talk: The Event of the Week. **8.5,** Theatre Review. **8.15,** Interval. **8.30,** Chamber Music Concert. Soloist: Mme. Rouzaud. **9.10,** Dance Music by the Sonora Orchestra, conducted by Fred Hoffmann. **11.0,** News. **11.5,** Dance Music on Gramophone Records.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—**6.45 a.m.,** Physical Culture. **7.30,** Weather and Physical Culture (contd.).

7.45, Light Music on Gramophone Records. 8.0, Press Review and Weather. 9.0, Concert by the Conservatoire Concert Society, relayed from the Old Conservatoire. 12 Noon, Concert by the Radio Paris Orchestra: Scottish Memories (Godfrey-Moore); Scènes alsaciennes (Massenet); Gitanerias (Infante); Musiques foraines (Schmitt); The Nutcracker Suite (Tchaikovsky); Pièce (Fourdrain). In the intervals at 1.0, Exchange, News and Weather, and at 1.30, Exchange. 2.0, Exchange. 3.0, Programme for Children. 3.45, Exchange and Market Prices. 3.50, Concert by the Radio Paris Orchestra: Olona (Mina); Primerose (Gabrié); Cheero Nero (Suley-Bengon-Pearly); Susita (Mina); Melody (Yonng-Fain and Pearly); Alma madrilena (Mina); Eternelle Ivresse (Ganne); Melody (Friend-Cesar Pearly); Kleine Madona (Wetzel-José); Taratata (O. Straus-Erwin); Siete Dias (Lucchesi); Brillante (Fray); Les Violettes (Waldteufel); Having Breakfast with the one I love (O. Straus-Magon). 5.30, Market Prices, Weather, Agricultural Report and Exchange. 7.0, Talk. 7.20, Agricultural Talk. 7.45, Commercial Prices, News and Review of the Latin Press. 8.0, Montmartre—Programme arranged by René Dorin. 8.30, Popular Music on Gramophone Records. 9.0, The Land of Smiles—Operetta in Three Acts (Lehár), relayed from the Gaité-Lyrique.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 366 metres; 25 kW. Relayed by **W8XK** on **48.86 metres** and **25.27 metres.—9.0 p.m.,** Dance Masters, from **New York.** 9.30, Concert Favourites, from **New York.** 10.0, KDKA Orchestra. 10.30, Weather Report. 10.32, Behind the Law—Tales of the Pennsylvania State Police. 10.45, Little Orphan Annie, from **New York.** 11.0, Little German Band. 11.30, Time Signal. 11.31, Temperature Report. 11.32, Teaberry Sport Review. 11.37, Press News Reeler. 11.42, Strange Facts. 11.44, Weather Report. 11.45, Izaak Walton League. **12 Midnight,** Time Signal, followed by A Recreo by Bill and Alex of the Downtown Y.M.C.A. **12.15 a.m. (Sunday),** Atkinson String Ensemble. 12.30, KDKA Players. 1.0 to 4.0, **New York** Relay. 1.0, American Taxpayers' League. 1.15, The Boston Symphony Orchestra. 3.15, Salon Singers. 3.30, Cuckoos 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.13, KDKA Artist Bulletin. 4.15, Press Last Minute News. 4.20, Presbyterian Missionaries. 5.20, Messages to Dwellers in the Far North.

PORSGRUND.—See **Oslo.**

PRAGUE

488.6 metres; 120 kW. **3.10 p.m.,** See **Bratislava.** 4.10, Talk on Economics. 4.20, Czech Lesson for Germans and German Lesson for Czechs. 4.50, Variety Music on Gramophone Records. 5.5, Agricultural Report. 5.15, Talk for Workers. 5.25, News in German. 5.30, German Transmission: Talk, with Illustrations: Carnival Customs in Bohemia. 6.0, News. 6.5, Talk: Dr. Alois Rasin. 6.20, Popular Concert. 7.20, Around the World on Gramophone Records. 7.30, Veni, vidi, vici—Musical Comedy (Ruzicka). In the interval at 8.0, Time Signal. 9.0, Time Signal. 9.1, News Bulletin. 9.15, See **Moravska-Ostrava.** 10.30 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres, 25 kW.; **LAUSANNE, 680 metres;** and **GENEVA, 760 metres.—5.30 p.m.** (from **Geneva**), Book Review. 6.0 (from **Geneva**), Weather, News and Announcements. 6.30 (from **Geneva**), Film Notes. 7.0 (from **Geneva**), Humorous Recital by M. Alfred Poulain (Pianoforte). 7.15 (from **Geneva**), Review of the Week. 7.25 (from **Geneva**), Popular Concert. 9.0, News Bulletin and Weather Forecast. 9.10 (from **Geneva**), Talk: The Work of the League of Nations. 9.25 (from **Geneva**), Dance Music. 10.20 (approx.), Close Down.

RIGA

525 metres; 15 kW.—**6.5 p.m.,** Indranic—Play in Four Acts (Rudolfs Blaumanis). In the intervals: News. 8.0, Weather. 8.30, Dance Music. 10.0 (approx.), Close Down.

RJUKAN.—See **Oslo.**

ROME

Call 1RO, 441 metres; 50 kW. Relayed by **Naples, 319 metres,** and **2RO, 25.4 metres.—7.0 a.m.,** Gymnastics. 7.15 to 7.30, Giornale Radio and Announcements. 11.30, Weather and Light Music on Gramophone Records. **12 Noon,** Time and Announcements. 12.2 to 1.15 **p.m.,** Orchestral Concert: Pitter-Patter (Lohr); Manuela (Carducci); Selection from Tip Toes (Gershwin); Pianoforte Solo: Selection from The King of Jazz (Youmans); Intermezzo from I quattro rusteghi (Wolf-Ferrari); Pianoforte Solo: Foxtrot (Connie); Melody (Nicholls); Pianoforte Solo: Loving you (Connie); Rio de Janeiro (Bixio). In the interval from 12.30 to 12.45, Giornale Radio and Exchange. 3.45, Children's Radio Review. 4.0, Exchange, Announcements, Report of the Royal Geographical Society and Giornale Radio. 4.15, Reading. 4.30 to 5.15, Orchestral Concert: La Smorfia e la mitra (Sassano); Odette (Franceschi); Selection from La Wally (Catalani); Five o'clock (Escobar); Carnival (Armandola); Entr'acte from Suor Angelica (Puccini); Monte Carlo (Eyman); Be my Greta Garbo. 6.0, Giornale Radio. 6.10 (from **Naples**), Shipping and Sports Notes. 6.15, Atmospheric Signals and Agricultural Notes. 7.0, Time, Announcements, and Light Music on Gramophone Records. 7.30, Sports Notes, Tourist Report, and Announcements. 7.45, Relay from a Theatre. In the intervals, Book Review, Theatre Notes and News.

SALZBURG.—See **Vienna.**

SCHENECTADY

GENERAL ELECTRIC COMPANY, WGY, 379.5 metres; 50 kW. Relayed at intervals by **W2XAF** on **31.48 metres,** and by **W2XAD** on **19.56 metres.—12 Midnight,** Soloist, from **New York.** 12.15 **a.m. (Sunday),** Stock Reports. 12.20, Hotel New Yorker Orchestra. 12.45, The World Today. 1.0, Lady Fingers (Pianists). 1.15, Bernard Silberg (Cellist). 1.30 till Close Down, **New York** Relay. 1.30, The Economic World Today. 2.0, The Golden Thread. 2.30, Oldsmobile Programme—Olsen's Orchestra. 3.0, Lucky Strike Hour and Programme Resume.

SCHWEIZERISCHER LANDESSENDER

BEROMUNSTER, 459 **metres,** 60 kW.; **BASLE, 244.1 metres;** and **BERNE, 245.9 metres. 11.28 a.m.,** Time Signal from Neuchâtel Observatory. 11.30, Weather and News. 11.40, Winter Sports Notes. 11.45, Popular Music on Gramophone Records. 12.35 **p.m.,** Weather and Exchange. 12.45 (from **Zürich**), Answers to Correspondence. 1.0 (from **Zürich**), Book Review. 1.30, Light Music on Gramophone Records. 2.0 (from **Zürich**), Talk for Stamp Collectors. 2.30 (from **Zürich**), Reading. 3.0 (from **Zürich**), Accordion Music. 3.40 (from **Zürich**), Chess Lesson. 4.0, Weather. 4.5 to 5.30, Interval. 5.30 (from **Basle**), Talk: Bronchial Asthma. 6.0 (from **Zürich**), Chimes from the Zürich Churches. 6.10, Time, Weather, and Market Prices. 6.15 (from **Basle**), Talk: The Swiss Bird Sanctuary. 6.45 (from **Berne**), Das Schwarzmädel (The Maid of the Black Forest)—Operetta in Three Acts (Jessel). In the interval at 8.20, Weather and News. 9.15 (approx.), Gramophone Dance Music. 10.0 (approx.), Close Down.

SOTTENS.—See **Radio-Suisse Romande.**

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by **Boden, 1,229.5 metres; Göteborg, 322 metres, Horby, 257 metres; Motala, 1,348 metres; Ostersund 770 metres;** and **Sundsvall, 542 metres.—3.0 p.m.** (from **Göteborg**), Concert by Artis Orchestra: March, Hail to the Spirit of Liberty (Sousa); Waltz from The Merry Peasant (Fall); Overture, Phèdre (Massenet); Serenata d'Amalfi (Becce); Selection from A Waltz Dream (O. Straus); Tango, Wenn man sein Herz verliert (Stransky). 4.5, Programme for Children. 4.30, Popular Music on Gramophone Records. 5.30, Variety Programme. 6.15, Weather and News. 6.30, Old Dance Music. 7.15, Talk: Our Newspapers—in the Past and Now, relayed from **Malmö (231 metres).** 7.35, Orchestral Concert of Popular Music. 8.45, Weather and News. 9.0, Dance Music by Gösta Jonsson's Band, relayed from the Kristall Hall. 10.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—**11.30 a.m.,** Orchestral Concert, conducted by Maurice de Villers: Nutcracker Suite (Tchaikovsky); Symphonic Poem, La Jeunesse d'Hercule (Saint-Saëns); Selection from Ariadne auf Naxos (R. Strauss); Norwegian Rhapsody (Svendsen); Humoresque (Reger); Orchestral Suite, Noce Gasconne (Lacôme). 12.45 **p.m.,** News. 1.0, Time and Exchange. 1.5, Light Music on Gramophone Records. 2.0, Dance Music on Gramophone Records. 3.0 to 3.45, Interval. 3.45, Talk: Chopin and Georges Sand. 4.0, Light Music on Gramophone Records. 4.45, Legal Talk in German. 5.0, Pasdeloup Symphony Concert, relayed from the Théâtre des Champs Elysées, Paris. 7.0, Gardening Talk in French. 7.15, Popular Music on Gramophone Records. 7.30, Time and News. 7.45, Light Music on Gramophone Records. 8.20, Lottery Results. 8.30, Orchestral Concert, relayed from Mulhouse-Wittenheim: March from Athalie (Mendelssohn); Ballet Music from La Statue (Reyer); Selection from Samson and Delilah (Saint-Saëns); Lento-Allegro from the Symphony in D Minor (Franck); Clarinet Ensemble: Concerto (Wettge); Overture, Tannhäuser (Wagner); Ballet Scene from Le roi s'amuse (Delibes); Six Dance Airs in Old Style: (a) Gaillarde, (b) Pavane, (c) Scène du Bouquet, (d) Lesquerade, (e) Madrigal, (f) Passepied and Finale Intermezzo from Cavalleria Rusticana (Mascagni); March from Act IV of Hubla (Franck). 10.30, Dance Music from the Savoy. **12 Midnight** (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres, 60 kW.; and **FREIBURG, 570 metres.—11.20 a.m.,** Schubert Song Recital, by Fritz Löffler (Baritone): Wohin; Du Neugierige; Ungeduld; Morgengruss; Des Müllers Blumen; Pause; Mit dem grünen Lautenbande. 11.45, Wind Instrument Music on Gramophone Records: March, Soldatenklänge (Buchholz); Aus der Jugendzeit (Radecke); Ich sende diese Blumen dir (Wagner); Gipsy Quadrille (Joh. Strauss); March, Waidmannsheil (Reesling). 12.19 **p.m.,** Contralto Song Recital, by Maria Birnbaum. 12.30, Concert by the Station Orchestra, conducted by Gustav Görlich. Soloist: Karl Haas (Vibraphone)). Overture, A Night in Venice (Joh. Strauss); Two Pieces for Strings (Muth): (a) Morgenstimmung im Walde, (b) Zug der Wandervögel; Romance for Vibraphone and Orchestra (Löhr); Music for Vibraphone (König); Waltz, Ballsirenen (Lehar); Bodeo notte (Leoncavallo); March Potpourri (Komzak). 1.30, Time, News, Weather and Programme Announcements. 1.45, Concert by Fred Hett and his Band, from the Königsbau Restaurant. 2.30, Programme for Children. 3.30, Report on the Stuttgart Six-day Races. 3.40 (from **Karlsruhe**), Soprano and Pianoforte Recital, by Mary Esseligroch and Tina Koch: Aria from La finta Giardiniera (Mozart); Fern von ihrem Werte (Mozart); Concert Aria, Ach, wie sündt' meine Hoffnung (Mozart); Zerbinetta's Aria from Ariadne auf Naxos (Richard Strauss). 4.10, Choral Concert, Part I: Mündlied, All' meine Gedanken (arr. Kloschich); Fahr wohl, du goldne Sonne (Beethoven); Die Nacht (Schubert); Ich hört ein Sichlein rauschen (16th Century Folk Song, arr. Heinrich); Folk Song, Ich hört ein Vöglein pfeifen (arr. Schauss); Schöner Augen schöne Strahlen (Brahms); Sommernacht (Berger). Part II (from **Schramberg**): Tröstung (Handel); Die Allmacht (Lachner); In Epiphania Domini (Neumann); Es wollt ein Jäger jagen (Heinrichs); Trinklied (Kreutzer); Heimfahrt vom Henrigen (Schulken); Ubermut (arr. Wohlgemuth). 5.25, Time Signal and Sports Notes. 5.35, Talk: Honoré Daumier. 6.0, Talk: The Philippine Islanders fight for their Freedom. 6.25, Time, News, Weather and Snow Report. 6.35, Report of the International Ski Jumping Championships in Freudenstadt. 7.5, see **Frankfurt.** 9.25, Time, Weather, News and Programme Announcements. 9.45, Dance Music by the Stuttgart Philharmonic Orchestra, with Song Refrains by Käte Mann (Soprano). 10.0 Report on the Stuttgart Six-day Races. 10.20, Dance Music from **London.** 12 **midnight** (approx.), Close Down.

SUNDSVALL.—See **Stockholm.**

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—**5.45 p.m.,** Operetta Music. 6.0, News. 6.15, Suite, Scènes pittoresques (Massenet). 6.30, 'Cello Recital: Air from Don Quixote (Massenet); Melody (Rubinstein); Dédicace (Saleski); Walter's Prize Song from The Mastersingers (Wagner). 6.45, Light Music. 7.0, Orchestra Music of the Argentine. 7.15, Horse Racing Results, Market Prices, and News. 7.30, Military Music. 8.0, Accordion Music. 8.15, Opera Music: Airs from (a) Si j'étais roi (Adam), (b) L'attaque du moulin (Bruneau), (c) The Fair Maid of Perth (Bizet). 8.30, Concert by a Viennese Orchestra. 9.0, Extracts from William Tell—Opera in Four Acts (Rossini). 10.0, Humorous Items. 10.15, North African News. 10.30, Concert for Listeners in Morocco: Overture, Si j'étais roi (Adam); Je ne sais pas si je vous aime (Ries); Violin Solo: Berceuse (Roskam); Air from Les dragons de Villars (Maillart); C'est Rosalie (Szulc). 11.0, Request Concert: Air from Congress Dances (Heymann); Ballet Music from Les deux pigeons (Messager); Duet from Manon (Massenet); A Exposition (Raiter). 11.30, Programme in English by the L.B.C. Song Recital: Little Dolly Day Dream (Stewart); Lily of Laguna (Stewart); My old Dutch (Chevalier); The Future Mrs. Awkins (Chevalier); Kathleen Mavourneen (Crawford); Killarney (Balfe); The Macgregors' Gathering (Lee); The Last Rose of Summer (Moore). **12 Midnight,** Weather and Announcements. 12.5 **a.m. (Sunday),** Hawaiian Guitar Music. 12.15, Orchestral Music: In a Monastery Garden (Ketelbey); Overture, Morning, Noon and Night (Suppé). 12.30 (approx.), Close Down.

TRIESTE

247.7 metres; 10 kW. **4.10 to 6.35 p.m.,** See **Turin.** 6.35, Concert of Music by Bohuslav Martinu: Nocturnes for 'Cello with Pianoforte accompaniment: (a) Andantino moderato, (b) Lento, (c) Moderato, (d) Allegretto moderato. 7.0 till Close Down, See **Turin.**

TRONDHEIM.—See **Oslo.**

TURIN

273.7 metres; 7 kW. Relayed by **Milan, 331.5 metres; Genoa, 312.8 metres;** and **Florence, 500.8 metres. 4.10 to 5.0 p.m.,** Dance Music, relayed from the Savoy Dance Hall. 5.35, Giornale Radio, Lottery Results, Agricultural Report and Dopolavoro Notes. 6.0, Popular Music on Gramophone Records. 6.20, Giornale Radio. 6.30, Time Signal, Announcements, Tourist Talk, and Gramophone Records (contd.). 7.0, Giornale Radio and Weather Forecast, followed by Light Music on Gramophone Records. 7.30, Talk: Events and Problems. 7.45, Variety Programme. 8.45, Review of New Books. 9.0, Dance Music by the Station Orchestra. 10.0, Giornale Radio.

VATICAN CITY

19.84 metres (Morning) and **50.26 metres (Evening);** 10 kW.—**10.0 to 10.15 a.m.,** Religious Announcements in Different Languages. 7.0 to 7.15 **p.m.,** Religious Information in Italian.

VIENNA

517 metres, 15 kW. Relayed by **GRAZ, 352.1 metres; INNSBRUCK, 283 metres; KLAGENFURT, 453.2 metres; LINZ, 246 metres;** and **SALZBURG, 218 metres.—4.45 p.m.,** The East in Western Music. Concert by the Volksoper Orchestra, conducted by Dr. Rudolf Weinich: Overture, Turandot (Weber); Indian March from L'Africaine (Meyerbeer); Intermezzo from Madame Butterfly (Puccini); Dance of the Moorish Slaves from Aïda (Verdi); A Festival in Bagdad, from Scheherazade (Rimsky-Korsakov); Arab Dance from the Peer Gynt Suite (Grieg); Waltz, Märchen aus dem Orient (Joh. Strauss); Overture, The Land of Smiles (Lehár). 5.50, Review of International Affairs. 6.20, Time, Weather, Sports Notes and Programme Announcements. 6.30, Recital of Songs and Ballads by Rudolph Bandler: Hochzeitslied (Löwe); Prinz Eugen (Löwe); Ein Mädchen verloren (Weber); Ruud (Abt); Lied an die Flasche (Pabst); Motten (Wertgartner); Two Songs (Hermann): (a) Der alte Herr, (b) Einst und jetzt; Three Songs (Hans Ruch): (a) Johann von Nepomuk, (b) Schneidergewicht, (c) Der alte Kakadu; Nachtwandler (Steiner-Wetchy); So oder so (Rebay); Song of the Flea (Mussorgsky). 7.0, Trio: Radio Comedy (Leo Lenz). 9.0, News, Weather and Announcements. 9.15, Concert of Dance Music by David Malke and his Jazz Band, with Song Refrains by Wolfgang Ernst.

WARSAW

1,411 metres; 120 kW.—**10.40 a.m.,** Press Review. 10.50, Weather Report for Aviation. 10.58, Time Signal and Bugle Call from the Tower of St. Mary's Church, Cracow. 11.5, Programme Announcements. 11.10, Light Music on Gramophone Records. 12.10 **p.m.,** Weather Forecast. 12.15, Broadcast for Schools, relayed from **Lwow (381 metres).** 12.35 to 2.10, Interval. 2.10, Announcements. 2.15, Economic Notes. 2.25, News and Answers to Correspondents on Military Matters. 2.35, Programme for Children relayed from **Cracow (312.8 metres).** 3.0, Light Music on Gramophone Records. 3.37, Announcements. 3.40, Talk. 4.0, The Pathetic Symphony (Tchaikovsky), on Gramophone Records. 4.40, Topical Talk. 4.55, Programme Announcements. 5.0, Light Music from the Café Adria. News in the interval. 6.0, Miscellaneous Items. 6.20, Agricultural Talk. 6.30, Topical Talk. 6.45, Radio Journal. 7.0, Concert of Operetta and Sound Film Music by the Station Orchestra, conducted by S. Nawrot. Soloists: S. Dobrowolska-Pawlowska (Soprano) and S. Witas (Tenor). Overture, Gipsy Love (Lehar); Dances and Songs of Old Vienna (Pachernegg); Spanish Gipsy Dance (Marquina); Boston from the Sound Film Cham (Maklakiewicz); Foxtrot Song (Barris); Foxtrot-Intermezzo, The Match Parade (Wehle); Mazurka (Cabella); Japanese Song from The Land of Smiles (Lehar); Song from The Merry Widow (Lehar); Waltz Potpourri (Henny Weber); Song from Tell me Tonight (Spoliansky-Henar); Andalusian Serenade, The Blue Pavilion (Armandola); Russian Dance (Bullerian); Song Boston (Michaelov); Polka (Dworakowsky); Czardas from Der Geist des Wojewoden (Grossmann); Melody from Les Cloches de Corneville (Planquette); Song from Gasparone (Millöcker); Mazurka (Namyslowsky); Galop, Durchs Ziel (Translateur). In an interval, Sports Notes and Radio Journal. 9.5, Chopin Pianoforte Recital by B. Kohn: Twelve Etudes, Op. 10. 9.40, Reading (Lipinska). 9.55, Weather Report and Police Notes. 10.0, Dance Music from the Bodega. In an interval at 10.30, News Bulletin for Members of The Polish Polar Expedition. 11.0 (approx.), Close Down.

ZURICH.—See **Schweizerischer Landessender.**

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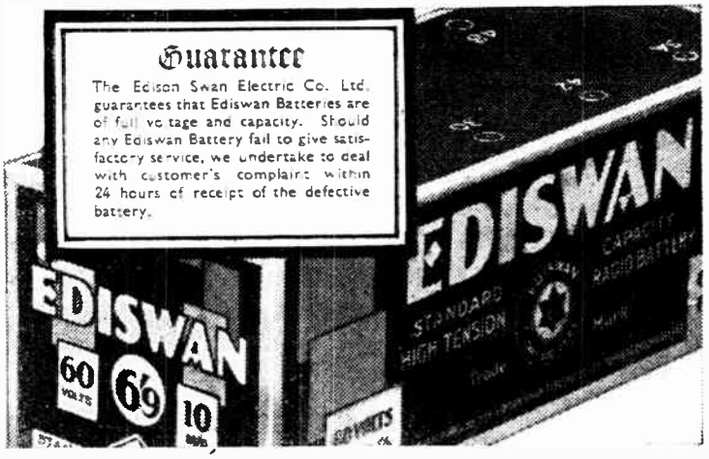
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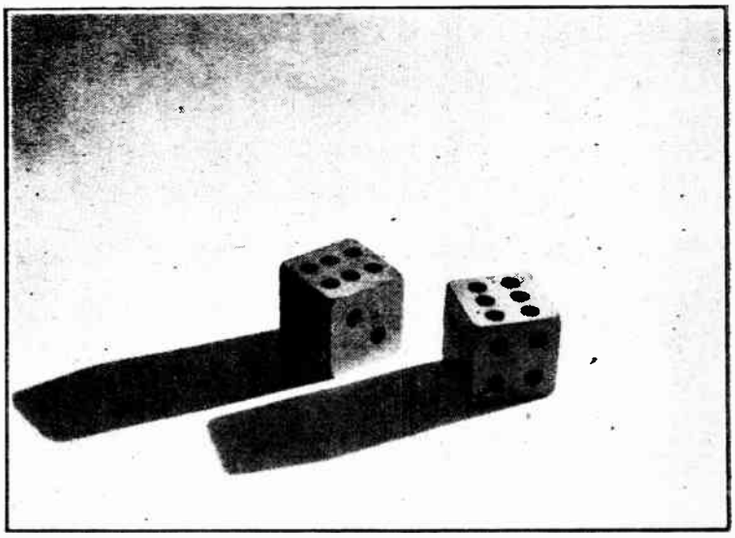

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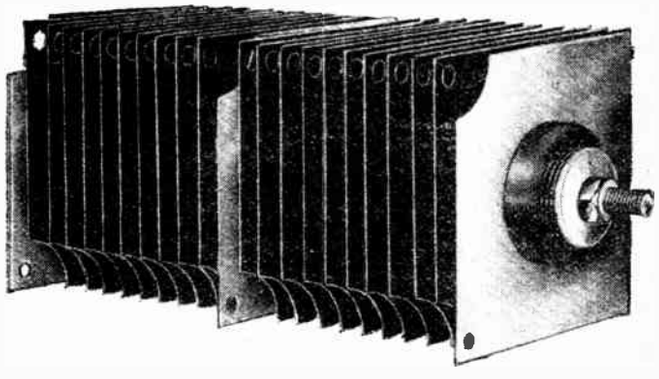

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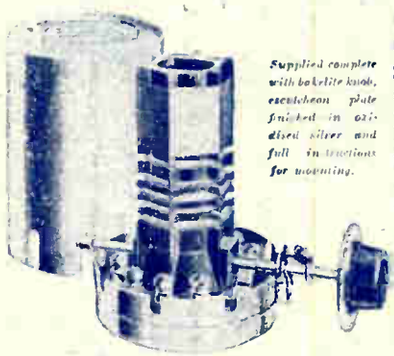

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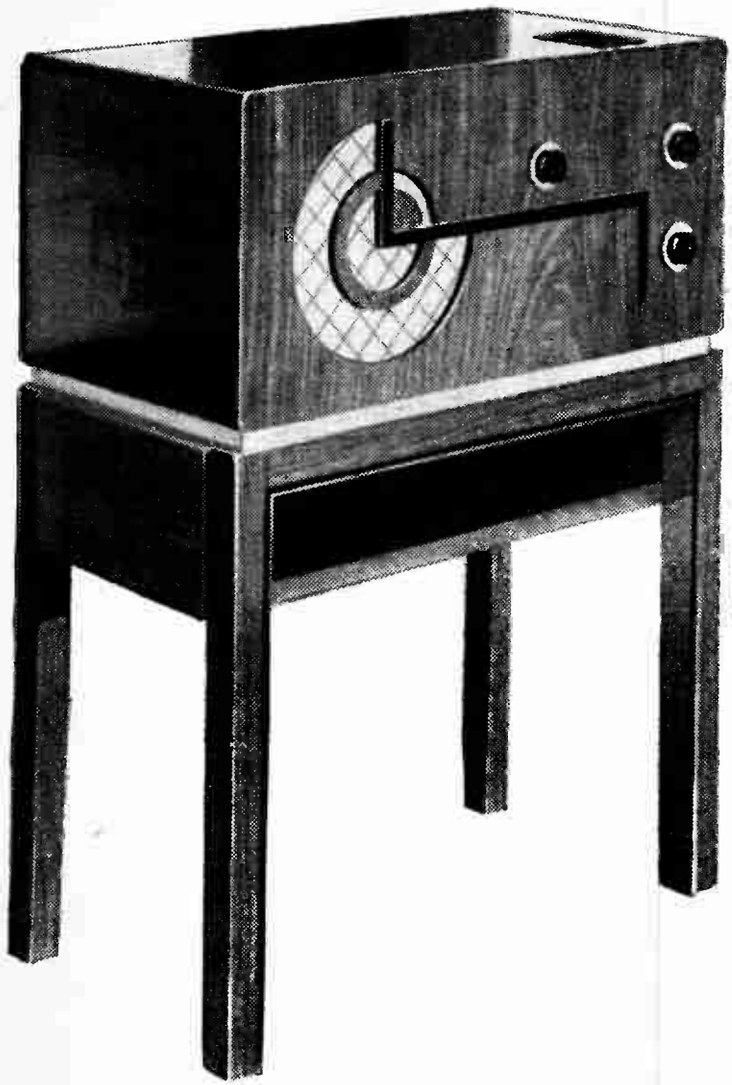

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The section on Selectivity in the A8 Booklet commences :—

SELECTIVITY

There are three forms in which an adjacent station can interfere with the wanted programme. They are

(1) A continuous heterodyne note of 9 kc. due to the carrier frequencies of the wanted and unwanted stations beating with each other.

(A simple illustration of how two frequencies beat can be appreciated by playing two adjacent low notes on a piano, when a slow rhythmic beat note will be heard. The frequency of the beat is equal to the difference in the frequencies of the two notes played.)

(2) Audible modulation interference—that is, the unwanted programme is intelligible and heard as a background to the wanted programme.

(3) Side band interference. The band of frequencies which are transmitted when broadcasting, and convey the audio frequencies produced in the studio, are known as side band frequencies. Those which are higher than the carrier frequency being called the upper side band and those which are lower in frequency the lower side band.

The side band frequencies of an unwanted station can beat with the carrier of the wanted station, the frequency of the beat note produced depending on how far away in the frequency scale the side band is from the wanted carrier.

This kind of interference sounds like "splashing" and is colloquially called, side-band splashing.

In considering selectivity, the following factors must be considered :

(1) What is the frequency separation of the stations concerned?
(2) What is their relative field strength at your receiving aerial?
(3) What extent of audio frequency response is demanded?
(4) At what maximum volume level will the speaker be operated?

These points are fully dealt with in the booklet, and if you would like a free copy, any Murphy dealer will be pleased to give you one.

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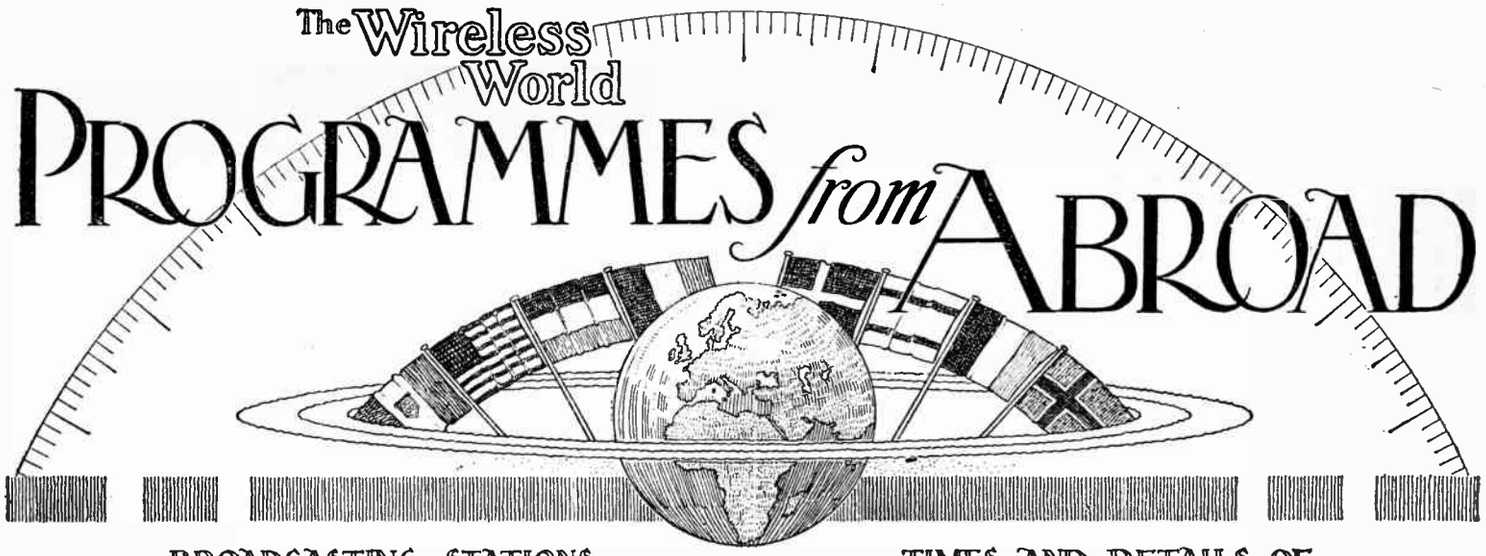
PROGRAMMES from ABROAD



BROADCASTING STATIONS ARRANGED IN ORDER OF WAVELENGTH

TIMES AND DETAILS OF FULL WEEK'S FOREIGN TRANSMISSIONS

Metres.	Kc.	kW.	Station.	Tuning Positions.
1935	155	7	Kaunas (Kovno) (Lithuania)	
1875	160	8.5	Hilversum (Holland)	
1796	167	40	Lahti (Finland)	
1725	174	75	Radio Paris, C.F.R.	
1635	183.5	60	Zeesen (Königswusterhausen) (Germany). (*S.-W. Stn. DJA on 31.38 m.*)	
1554.4	193	30	Daventry National	
1538	195	7	Ankara (Angora) (Turkey)	
1481	202.5	100	Moscow, RV1 (Old Komintern) (Russia)	
1446	207.5	13	Eiffel Tower, FL, Paris	
1412	212.5	120	Warsaw 1 (Poland)	
1380	217.5	100	Novosibirsk, RV6 (Russia)	
1348	222.5	30	Motala (Sweden). (*Relays Stockholm*)	
1304	230	100	Moscow, WZSPS (Trade Union) (Russia)	
1275	235	0.5	Tunis-Kasbah (Tunisia)	
1230	244	0.6	Boden (Sweden). (*Relays Stockholm*)	
1200	250	5	Stamboul (Turkey)	
1200	250	21	Reykjavik (Iceland)	
1170	256	25	Tashkent, RV11 (Russia)	
1154	260	7.5	Kalundborg (Denmark). (*Relays Copenhagen*)	
1117	268.5	40	Moscow, Popoff RV58 (Russia)	
1083	277	60	Oslo (Norway)	
1071	280	35	Tiflis, RV7 (Russia)	
1035	290	36	Kiev, RV9 (Russia)	
1000	300	100	Moscow (Russia)	
938	320	20	Kharkov, RV4 (Russia)	
857	350	100	Leningrad (Russia)	
840	357	18.5	Budapest (Hungary)	
825	363.6	50	Sverdlovsk, RV5 (Russia)	
770	389	0.6	Ostersund (Sweden). (*Relays Stockholm*)	
760	395	1.3	Geneva (Switzerland). (*Relays Sottens*)	
720	416.6	20	Moscow, RV2 (Experimental) (Russia)	
690	434.6	1.5	Oulu (Uleaborg) (Finland)	
680	441.2	0.6	Lausanne (Switzerland). (*Relays Sottens*)	
574.7	522	0.7	Hamar (Norway). (*Relays Oslo*)	
574.7	522	2.5	Ljubljana (Yugoslavia)	
569	527	0.25	Freiburg-im-Breisgau (Germany). (*Relay Stn.*)	
568.1	528	2	Grenoble (France)	
566	530	0.25	Hanover (Germany). (*Relays Hamburg*)	
563	533	16	Wilno (Poland). (*Relay Station*)	
560	536	0.25	Augsburg (Germany). (*Relays Munich*)	
560	536	1.5	Kaiserslauten (Germany). (*Relays Munich*)	
558.6	537	1	Tampere (Finland). (*Relays Helsinki*)	
550	545	18.5	Budapest No. 1 Lakihegy (Hungary)	
542	554	10	Sundsvall (Sweden). (*Relays Stockholm*)	
537.6	558	3	Palermo (Italy)	
533	563	60	Munich (Germany)	
525	571	15	Riga (Latvia)	
517	580	15	Vienna (Rosenhügel) (Austria)	
509	589	15	Brussels No. 1, Velthem (Belgium). (*In French*)	
500.8	599	20	Florence, 1FI (Italy). (*Relays Turin*)	
495.8	605	1.2	Trondheim (Norway)	
488.6	614	120	Prague, No. 1 (Czechoslovakia)	
480	625	50	North Regional (Manchester)	
472.4	635	60	Langenberg (Germany)	
467	642	0.4	Aalesund (Norway)	
465.8	644	1.5	Lyons la Doua, PTT (France)	
459.4	653	60	Beromünster (Schweizerischer Landessender) (Switzerland).	
453.2	662		San Sebastian, EAJ8 (0.6 kW.): Pori (1.0 kW.) (Finland); Danzig (0.5 kW.) (*relays Heilsberg*); Klagenfurt (0.5 kW.) (Austria) (*relays Vienna*); Porsgrund (0.7 kW.) (*relays Oslo*), Tromsö (0.1 kW.), Bodö (0.5 kW.) (Norway); Upsala (0.15 kW.) (Sweden) (*relays Stockholm*).	

Metres.	Kc.	kW.	Station.	Tuning Positions.
453.2	662	10	Odessa, RV13 (Russia)	
447.1	671		Paris, Ecole Supérieure, PTT (7.0 kW.); Rjukan (0.15 kW.), Notodden (0.08 kW.) (Norway) (*relays Oslo*).	
441.2	680	50	Rome, 1RO. (*S.-W. Station, 2RO on 25.4 m.*)	
435.4	689	55	Stockholm, SASA (Sweden)	
430	698	2.5	Belgrade (Yugoslavia)	
424.3	707	2	Madrid, EAJ7 (Union Radio). (*After 7.0 p.m.*)	
424.3	707	100	Moscow, Imini Stalina (Russia)	
419.5	715	1.5	Berlin, No. 1, Witzleben (Germany)	
416.4	720.5	5	Rabat (Morocco)	
413	725	80	Athlone (Irish Free State)	
408.7	734	16	Katowitz (Poland)	
403.8	743	25	Sottens (Radio Suisse Romande) (Switzerland)	
398.9	752	25	Midland Regional	
394.2	761	12	Bucharest (Roumania)	
389.6	770	120	Leipzig (Germany)	
389.6	770	10	Archangel, RV36 (Russia)	
385.1	779	8	Toulouse (Radiophonie du Midi) (France)	
385.1	779	10	Stalino, RV26 (Russia)	
381	788	16	Lwow (Lemburg) (Poland)	
376.4	797	50	Scottish Regional (Falkirk)	
372.2	806	1.5	Hamburg (Germany)	
370.1	810.5	0.8	Radio, LL, Paris	
368.1	815		Seville, EAJ5 (Union Radio) (1.0 kW.) (Spain); Bolzano (1.0 kW.) (Italy); Helsinki (10 kW.) (Finland) (*relays Lahti*); Kharkov, RV20 (10 kW.) (Russia).	
365.8	821	0.7	Fredriksstad (Norway). (*Relays Oslo*)	
364.1	824	1	Bergen (Norway)	
363.6	825	13	Algiers (Algeria)	
360.6	832	60	Mühlacker (Stuttgart) (Germany)	
355.9	843	50	London Regional (Brookmans Park)	
352.1	852	7	Graz (Austria). (*Relays Vienna*)	
348.8	860	7.6	Barcelona, EAJ1 (Spain)	
348.8	860	10	Leningrad, RV70 (Russia)	
345.2	869	11.5	Strasbourg, PTT (France)	
341.7	878	35	Brno (Brunn) (Czechoslovakia)	
338.2	887	15	Brussels II, Velthem (Belgium). (*In Flemish*)	
335	896	5	Cadiz (Spain)	
334.4	897	1.9	Poznan (Poland)	
331.5	905	50	Milan (Italy). (*Relays Turin*)	
328.2	914	60	Poste Parisien (France)	
325	923	60	Breslau (Germany)	
321.9	932	10	Göteborg (Sweden). (*Relays Stockholm*)	
318.8	941	0.25	Dresden (Germany). (*Relays Leipzig*)	
318.8	941	1.5	Naples, 1NA (Italy). (*Relays Rome*)	
315.8	950	1.6	Marseilles, PTT (France)	
312.8	959	1.7	Cracow (Poland)	
312.8	959	10	Genoa, 1GE (Italy). (*Relays Turin*)	
309.9	968	1	Cardiff	
307	977	0.7	Radio Vitus (Paris). (*S.-W. Stn. on 43.75 m.*)	
304	986	13	Bordeaux Lafayette, PTT (France)	
301.5	995	50	North National (Manchester)	
298.8	1004	11	Tallinn (Esthonia)	
296.1	1013	20	Huizen (Holland). (*After 4.40 p.m.*) (*Exchanges wavelengths with Hilversum every three months.*)	
293.5	1022	0.7	Limoges, PTT (France)	
293.5	1022	2.6	Kosice (Czechoslavakia)	
291	1031	10	Viipuri (Viborg) (Finland). (*Relays Helsinki*)	
288.3	1040	50	Scottish National (Falkirk)	
288.3	1040	—	British Relays (Bournemouth, Plymouth)	
286	1049	0.8	Montpellier (France)	
285.1	1052	0.7	Lyons (Radio-Lyon) (France)	

BROADCASTING STATIONS ABROAD (In Order of Wavelength).

Metres.	Kc.	kW.	Station.	Tuning Positions.
283.6	1058	0.5	German Relays (Berlin, Magdeburg, Stettin)	
283.6	1058	0.5	Innsbruck (Austria). (*Relays Vienna*)	
282.2	1063	2	Lisbon CT 1AA (Portugal). (*Short-wave Station on 31.25 m.*)	
281.2	1067	0.75	Copenhagen (Denmark)	
278.8	1076	13.5	Bratislava (Czechoslovakia)	
276.5	1085	60	Heilsberg (Germany)	
273.7	1096	7	Turin (Italy)	
271.5	1105	1.3	Rennes, PTT (France)	
269.8	1112	20	Bari (Italy)	
269.8	1112	0.25	Bremen (Germany). (*Relays Hamburg*)	
267.6	1121	1.5	Valencia (Spain)	
265.8	1128.5	1.3	Lille, PTT (France)	
263.8	1137	11.2	Moravska Ostrava (Czechoslovakia)	
261.5	1147	50	London National (Brookmans Park)	
259.3	1157	17	Frankfurt-a.M. (Germany)	
257.1	1167	10	Hörby (Sweden). (*Relays Stockholm*)	
255.1	1176	0.7	Toulouse, PTT (France)	
253.1	1185	5	Gleiwitz (Germany). (*Relays Breslau*)	
252	1193	1	Barcelona, EAJ15 (Assoc. Nat.) (Spain)	
249.6	1202	0.8	Juan-les-Pins, Nice (France)	
247.7	1211	10	Trieste (Italy)	
245.9	1220	0.12	Swansea	
245.9	1220		Berne (0.5 kW.) (Switzerland) (*relays Beromünster*); Eskilstuna (0.2 kW.), Säffle (0.4 kW.) (Sweden) (*relays Stockholm*); Cassel (0.25 kW.) (Germany) (*relays Frankfürt*); Linz (0.5 kW.) (Austria) (*relays Vienna*); Pietarsaari (0.5 kW.), Turku (Abo) (0.5 kW.) (Finland) (*relays Helsinki*); Schaerbeek (0.1 kW.) (Belgium)	
244.1	1229	0.5	Basle (Switzerland). (*Relays Beromünster*)	
242.3	1238	1	Belfast (N. Ireland)	
240.6	1247	0.5	Stavanger (Norway)	
238.9	1256	2	Nürnberg (Germany). (*Relays Munich*)	
238	1260	1	Nimes (France)	
237.2	1265	3	Bordeaux, Sud-Ouest (France)	
235.5	1274	0.5	Kristiansand (Norway)	
235	1283	1.65	Lodz (Poland). (*Relay Station*)	
232.2	1292	0.25	Kiel (Germany). (*Relays Hamburg*)	
230.6	1301	—	Swedish Relay Stations. (Malmö, Norrköping, Karlstad and Trollhätten).	
229	1310	0.5	Umea (Sweden)	
227.4	1319	0.5	Flensburg (Germany). (*Relays Hamburg*)	
224.4	1337	1	Cork (Irish Free State)	
223	1345	10	Fécamp, Radio-Normandie (France)	
222.9	1346	0.15	Hüdiksvall (Sweden)	
219.9	1365	1.5	Béziers (France)	
218.5	1373	0.2	Plymouth	
218.5	1373	0.5	Salzburg (Austria). (*Relays Vienna*)	
217	1382	0.5	Königsburg (East Prussia) (Germany)	
217	1382	0.25	Karlstad (Sweden)	
215.6	1391	0.1	Brussels, Radio-Chatelineau (Belgium)	
215.6	1391	0.2	Halmstad (Sweden)	
214.3	1400	1	Aberdeen	
214.3	1400	10	Warsaw, No. 2 (Poland)	
211.3	1420	1	Newcastle	
209	1430	0.8	Magyarovar and Miskolcz (Hungary)	
207	1450	0.15	Boras (Sweden)	
206	1460	0.2	Ornsköldsvik (Sweden)	
204.1	1470	0.2	Gävle (Sweden)	
202.7	1480	0.25	Kristineham (Sweden)	
201.3	1490	0.25	Hälsingborg (Sweden)	
195	1530	0.2	Karlskrona (Sweden)	

PRINCIPAL SHORT-WAVE STATIONS.

(N.B.—Times of Transmission, given in parentheses, are approximate only and represent G.M.T.)

Metres.	Kc.	Call Sign.	Station.	Tuning Positions.
80.0	3,750	2RO	Rome	
70.2	4,273	RW15	Khabarovsk (Russia). (*Daily* 09.00–12.00)	
62.56	4,795	VE9BY	London, Ont. (Canada). (*Sun.* 06.00)	
62.5	4,800	W2XV	Long Island, N.Y. (U.S.A.). (*Fri.* 24.00)	
58.3	5,146	PMY	Bandoeng (Java). (*Daily* 12.20 *and* 07.00.)	
58.0	5,172	OK1MPT	Prague (Czechoslovakia). (*Tues. and Fri.* 19.30.)	
54.52	5,502	W2XBH	Brooklyn, N.Y. (U.S.A.). (*Relays WCGU*)	
52.7	5,690	HJU1	Tananarive, P.T.T. (Madagascar)	
52.5	5,714	HCJB	Quito (Ecuador). (*Daily* 12.30)	
51.22	5,857	XDA	Chapultepec (Mexico)	
50.6	5,930	HKO	Medellin (Colombia)	
50.26	5,970	HVJ	Vatican State, Rome. (*Daily* 19.00)	
50.0	6,000	ZL3ZC	Christchurch (New Zealand). (*Wed.* 03.00, *Sat.* 07.30.)	
50.0	6,000	—	Bucharest (Roumania)	
50.0	6,000	RW59	Moscow	
50.0	6,000	EAR25	Barcelona, Radio Club (Spain). (*Sat.* 20.00.)	
49.96	6,005	VE9DR	Drummondville (Canada). (*Relays CFCF*, 01.00-05.00.)	
49.96	6,005	HRB	Tegucigalpa (Honduras). (*Daily ex. Sun.* 00.00–05.00.)	
49.83	6,020	W9XF	Chicago, Ill. (U.S.A.). (*Relays WENR*)	
49.8	6,023	XEW	Mexico City (Mexico). (*Daily* 01.00)	
49.67	6,042	W2XAL	Coytesville, N.J. (U.S.A.). (*Relays WRNY.*)	
49.59	6,050	VE9HX	Halifax (Nova Scotia). (*Relays CHNS*)	
49.58	6,050	GSA	Empire Broadcasting, Zones 4-5	
49.5	6,060	VQ7LO	Nairobi (Kenya Colony). (*Daily* 16.30)	
49.5	6,060	W8XAL	Mason, Ohio (U.S.A.). (*Relays WLW*)	
49.5	6,060	W3XAU	Philadelphia, Pa. (U.S.A.). (*Relays WCAU.*)	
49.43	6,069	VE9CS	Vancouver, B.C. (Canada)	
49.4	6,072	UOR2	Vienna. (*Tues.* 13.00, *Thurs.* 15.00, *Sat.* 23.00.)	
49.34	6,080	W2XCX	Kearny, N.J. (U.S.A.). (*Relays WOR*)	
49.34	6,080	W9XAA	Chicago, Ill. (U.S.A.). (*Relays WCFL*)	
49.22	6,095	VE9GW	Bowmanville, Ont. (Canada). (*Daily* 20.00)	
49.2	6,098	ZTJ	Johannesburg (S. Africa). (*Weekdays* 09.00, 14.00 [*Sat.* 14.30] *and* 17.00, *Sun.* 13.00 *and* 17.30.)	
49.18	6,100	W3XAL	Bound Brook, N.Y. (*Relays WJZ*)	
49.1	6,110	VUC	Calcutta, India. (*Daily* 13.00)	
49.02	6,120	W2XE	Long Island, N.Y. (U.S.A.). (*Relays WABC.*)	
48.86	6,140	W8XK	East Pittsburg, Pa. (U.S.A.). (*Relays KDKA.*)	
48.8	6,147	VE9CL	Winnipeg (Canada). (*Daily ex. Sun.* 00.30)	
48.65	6,167	X1F	Mexico City (Mexico)	
48.35	6,205	HKC	Bogota (Colombia). (*Daily* 15.00)	
48.2	6,220	2RO	Rome (Italy)	
48.05	6,243	HKD	Barranquilla (Colombia). (*Weekdays* 23.45)	
48.0	6,250	CN8MC	Casablanca (Morocco). (*Relays Rabat*)	
47.0	6,382	HC1DR	Quito, Ecuador. (*Daily* 01.00)	
46.69	6,425	W3XL	Bound Brook, N.J. (U.S.A.). (*Relays WJZ irregular.*)	
46.67	6,426	VE9BY	London, Ont. (Canada). (*Sat.* 01.00 *Sun.* 02.00.)	
45.38	6,611	REN	Moscow (*Relays Trade Union Stn.*)	
45.0	6,667	FM8KR	Constantine (Algeria). (*Mon. and Fri.* 23.00.)	
45.0	6,667	TGW	Guatemala City (Central America). (*Daily* 03.00.)	
43.75	6,860	—	Radio Vitus, Paris. (*Daily* 20.30)	
43.0	6,970	EAR110	Madrid. (*Tues. and Sat.* 22.30)	
41.7	7,195	VS1AB	Singapore (Malay States). (*Sun. and Wed.* 15.30.)	
41.6	7,211	EAR58	Teneriffe (Radio Club) (Canary Islands)	
41.5	7,230	HB9D	Zurich (Radio Club) (Switzerland). (*1st and 3rd Sun.*)	
41.0	7,320	HSP2	Bangkok (Siam). (*Mon.* 14.00)	
40.3	7,443	HBQ	Radio Nations, Prangins (Switzerland). (*Sun.* 22.00-22.45)	
39.7	7,556	HKF	Bogota (Colombia). (*Westinghouse Labs.*)	
39.4	7,612	X26A	Nuevo Laredo (Mexico). (*Thurs.* 16.00)	
38.7	7,797	HBL	Radio Nations, Prangins (Switzerland). (*Sun.* 22.00–22.15.)	
36.92	8,125	PLW	Bandoeng (Java). (*Daily* 10.00–14.00)	
34.68	8,650	W2XV	Long Island, N.Y. (U.S.A.). (*Fri.* 23.00)	
34.68	8,650	VE9BY	London, Ont. (Canada). (*Mon.* 21.00)	
33.50	8,928	TGX	Guatemala City (S. America)	
32.26	9,300	—	Rabat (Morocco). (*Sun.* 21.00)	
31.58	9,500	PRBA	Rio de Janeiro (Brazil). (*Daily* 21.30)	
31.55	9,510	VK3ME	Melbourne (Australia). (*Wed. and Sat.* 10.00.)	
31.54	9,510	GSB	Empire Broadcasting, Zones 2, 4, 5	
31.51	9,520	OXY	Skamlebaek (Denmark). (*Relays Copenhagen.*)	
31.48	9,530	W2XAF	Schenectady, N.Y. (U.S.A.). (*Relays WGY*)	
31.38	9,560	DJA	Zeesen (Germany). (*Daily* 13.00)	
31.35	9,570	SRI	Poseu (Poland). (*Tues. and Thurs.* 17.30)	
31.35	9,570	W1XAZ	East Springfield, Mass. (U.S.A.). (*Relays WBZ.*)	
31.3	9,582	W3XAU	Philadelphia, Pa. (U.S.A.). (*Daily ex. Thurs. and Fri.* 21.00.)	
31.3	9,580	HBL	Radio Nations, Prangins (Switzerland). (*Sun.* 22.00-22.45)	
31.29	9.585	GSC	Empire Broadcasting, Zone 3	
31.28	9,590	VK2ME	Sydney (Australia). (*Sun.* 10.00)	
31.25	9,598	CT1AA	Lisbon (Portugal). (*Tues. and Fri.* 22.00-24.00)	
31.10	9,640	HS2PJ	Bangkok (Siam). (*Mon.* 02.00–05.00)	
30.43	9,869	EAQ	Aranjuez (Spain). (*Daily* 23.30, *Sat.* 18.00)	
30.0	10,000	—	Belgrade (Yugoslavia). (*Mon.* 19.00)	
29.3	10,238	T14NRH	Heredia (Costa Itica). (*Daily* 22.00 *and* 02.00.)	
28.98	10,350	LSX	Buenos Aires (Argentina). (*Daily* 20.30)	
26.83	11,180	CT3AQ	Funchal (Madeira). (*Tues. and Thurs.* 10.30–12.30.)	
25.63	11,700	FYA	Pontoise (France). (*Colonial Stn. E-W, daily* 20.00.)	
25.6	11,720	VE9JR	Winnipeg (Canada). (*Daily ex. Sat. and Sun.* 17.45)	
25.53	11,750	GSD	Empire Broadcasting, Zones 1 & 4	
25.5	11,760	XDA	Chapultepec (Mexico). (*Daily* 20.00)	
25.4	11,810	VE9GW	Bowmanville (Canada). (*Daily* 18.00)	
25.4	11,810	2RO	Prato Smeraldo, Rome. (16.00 *and* 19.30)	
25.34	11,840	W9XAA	Chicago, Ill. (U.S.A.). (*Relays WCFL*)	
25.28	11,865	GSE	Empire Broadcasting, Zone 2	
25.27	11,870	W8XK	East Pittsburg, Pa. (U.S.A.). (*Relays KDKA.*)	
25.2	11,905	FYA	Pontoise (France). (*Colonial Stn. N-S*)	
23.38	12,830	—	Rabat (Morocco). (*Sun.* 11.30)	
20.5	14,630	XDA	Chapultepec (Mexico). (*Daily* 19.30)	
19.9	15,075	T14NRH	Heredia (Costa Rica). (*Sat., Sun., Mon.* 16.00 *and* 21.00)	
19.84	15.120	HVJ	Vatican State, Rome. (*Daily* 10.00)	
19.81	15,140	GSF	Empire Broadcasting, Zone 5	
19.73	15,200	DJB	Zeesen (Germany). (*Daily* 13.00–17.00)	
19.72	15,210	W8XK	East Pittsburg, Pa. (U.S.A.) (*Relays KDKA.*)	
19.68	15,244	FYA	Pontoise (France). (*Colonial Stn. E-W*)	
19.56	15,340	W2XAD	South Schenectady, N.Y. (U.S.A.) (*Daily* 18.00.)	
16.9	17,750	HSP	Bangkok (Siam). (*Sun. and Tues.* 21.00)	
16.88	17,770	GSG	Empire Broadcasting, Zone 2	
16.87	17,780	W3XAL	Bound Brook, N.J. (*Weekdays* 13.00)	
16.57	18,105	W9XAA	Chicago, Ill. (U.S.A.). (*Relays WCFL*)	
14.47	20,739	LSY	Buenos Aires (Argentina). (*Sun.* 21.00)	
13.97	21.470	GSH	Empire Broadcasting, Zone 3 (*Daylight working*)	
13.92	21,540	W8XK	East Pittsburg (*Relays KDKA.*)	

FOREIGN SUNDAY PROGRAMMES

FEBRUARY THE NINETEENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL	Stokowski programme (gramophone records). Rev. Canon C. S. Carpenter: "The Future Life." Violoncello recital. "Why Man Believes in God," by the Very Rev. Dean of Exeter. Orchestral concert from Eastbourne.
LONDON REGIONAL	Military Band concert and Glee Singing. "The Slaying of the Suitors" (Homer's Odessey), read by Ronald Watkins. Service from the Bow Hall Wesleyan Mission, with address by Rev. Harry Williams. Sunday orchestral concert.
MIDLAND REGIONAL	Vocal and instrumental concert. Service conducted by Rev. G. H. Taylor, relayed from Central Hall, Birmingham.
NORTH REGIONAL	Service relayed from St. Mary's Roman Catholic Church, St. Helens, with address by Father Reginald Riley, S.J.
WEST REGIONAL	Cardiff Musical Society concert, relayed from the Park Hall, Cardiff.
SCOTTISH REGIONAL	National and London Regional programmes. Roman Catholic service in Gaelic.
BELFAST	Service from Fisherwick Presbyterian Church, Belfast.

ABROAD

BRUSSELS (No. 1)	The Radio Orchestra, conducted by C. Walpot.
COPENHAGEN	Concert of Czech music, by the Station Orchestra.
HAMBURG	Gala concert, from Bremen, conducted by Prof. Abendroth.
HILVERSUM	Jack Payne and his Band.
LANGENBERG	The Station Orchestra, conducted by Büschkotter.
ROME	Orchestral concert, conducted by R. Santarelli.
STOCKHOLM	Concert of opera music, by the Station Orchestra.

ATHLONE

413 metres; 60 kW.; and **CORK, 224.4 metres.**—**8.30 p.m.,** Time Signal. **8.31,** Vocal and Instrumental Concert. **11.0,** Time Signal, News, Weather Report and Close Down.

BARCELONA

RADIO-BARCELONA, Call EAJ1, 348.8 metres; 8 kW.—**11.0 a.m.,** Chimes from the Cathedral and Weather Forecast. **1.0 p.m.,** Light Music on Gramophone Records. **1.30** (in an interval), Theatre Notes. **2.0,** Film Review, followed by Concert by the Station Sextet. **3.0,** Programme for Hospitals and other Benevolent Institutions with Gramophone Records. **4.0 to 5.30,** Interval. **5.30,** An Opera, relayed from the Gran Teatro del Liceo. In the interval: Agricultural Talk. **7.0,** A Musical Comedy on Gramophone Records. **10.45,** Chess Lesson. **11.0** (approx.), Close Down.

BARI

269.8 metres; 20 kW.—**9.45 a.m.,** Agricultural Report. **10.5,** Sacred Music. **10.20,** Bible Reading. **12.0 Noon,** Giornale Radio. **12.10 p.m.,** Quintet Concert. In the interval at **12.55,** Weather Forecast, and at **1.0,** Time Signal and Announcements. **4.30,** Light Music on Gramophone Records. Sports Notes in the interval. **7.0,** Sports Results and Giornale Radio. **7.30,** Time Signal and Announcements. **7.35,** Concert. In the interval, Announcements. **9.55,** News Bulletin.

BASLE.—See **Schweizerischer Landessender.**

BELGRADE

430.4 metres; 2.8 kW.—**6.0 p.m.,** Jugoslav Folk Song Recital by Frau Petkovic-Milivojevic. **6.40,** Wireless Talk. **7.10,** Violin Recital by Professor Milan Dimitrijevic. **7.40,** A Radio Play. **8.10,** Concert by the Radio Orchestra. **9.10,** News and Dance Music from the Pique Palais de Danse.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres, 60 kW.—**10.30 a.m.,** See **Leipzig. 11.0 a.m.,** Concert from **Berlin (Witzleben). 11.55** (in an interval), Nauen Time Signal. **1.0 p.m.,** Talk for Parents. **1.30,** Gramophone Records for Children. **2.15,** Talk for Young People. **2.40,** Lyrics by Rudolf Paulsen. **2.55,** Songs by Schubert: In der Ferne; Der Atlas; Ihr Bild; Das Fischermädchen; Am Meer; Der Doppelgänger; Die Taubenpost. **3.25,** Talk: Art in Handicraft: German Wood and German Furniture. **3.55,** Concert by the Cologne Orpheus Glee Union and the Wireless Military Band, relayed from **London. 5.0,** Talk: The Plight of the Children and Relief in Thuringia. **5.30,** Radio Report from **Frankfurt. 7.0,** See **Vienna. 8.20,** Concert of Modern Chamber Music: Suite for String Orchestra (Janacek); Three Anecdotes for Radio (Paul Hindemith); Prelude and Scherzo for String Octet Op. 11 (Schostakowitsch); Italian Serenade for String Orchestra (Hugo Wolf). **9.20,** Weather, News and Sports Notes. **9.45,** Weather Report for Shipping. **10.0,** Concert from **Vienna. 11.0** (approx.), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—**10.30 a.m.,** See **Leipzig. 11.0,** Wireless Matinée, relayed from the Winter Garden; The Berlin Wireless Orchestra, conducted by Bruno Seidler-Winkler; Soloists: Marguerite Perras and Joseph Schmidt. **1.0 p.m.,** Notes on the Week's Programme. **1.5,** Talk: Is it worth while to train for a Career? **1.30 to 2.0,** Programme for Children. **2.30,** Orchestral Concert, conducted by Berthold Goldschmidt. **3.0,** Talk with three boys at the school-leaving age. **5.0,** See **Stuttgart. 5.30,** Radio Report from **Frankfurt. 7.0 to 11.0,** See **Vienna.** In an interval at **9.0,** Weather, News, and Sports Notes. **11.0** (approx.), Close Down.

BERNE.—See **Schweizerischer Landessender.**

BEROMUNSTER. — See **Schweizerischer Landessender.**

BODEN.—See **Stockholm.**

BODO.—See **Oslo.**

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—**8.0 a.m.,** Review of the Paris Morning Press and News relayed from **Paris (Ecole Supérieure), 447.1 metres. 11.0,** Running Commentary on the International Ski-ing Championship, relayed from **Grenoble, 666 metres. 12 Noon,** Concert, relayed from **Paris (Ecole Supérieure). 2.0,** Relay from **Paris** or Relay of a Local Festival. **2.30,** Symphony Concert, relayed from **Paris (Ecole Supérieure). 4.0,** A Radio Report from **Nice. 7.30** (aprox.), Radio Journal. **7.45,** Sports Talk. **8.0,** Talk for Ex-Servicemen. **8.15,** Lottery Results. **8.30,** Light Music on Gramophone Records. **9.0,** Dance Music with Gramophone Records in the intervals.

BRATISLAVA

279 metres; 14 kW.—**11.5 a.m.,** See **Brno. 12.30 p.m.,** See **Prague. 12.45,** Agricultural Report. **1.0,** Hydrographic Report. **1.5 to 2.0,** Relay of the Ski-ing Championship from Krenuica. **2.30,** See **Prague. 3.30,** See **Moravska-Ostrava. 4.30,** Talk on Slovak Poets. **4.40,** Concert by Station Orchestra. **6.0,** See **Prague. 8.30,** Concert of Light Music by the Station Band, conducted by K. Nagi. **9.0,** See **Prague. 10.0** (approx.), Close Down.

BREMEN.—See **Hamburg.**

BRESLAU

325 metres, 60 kW.; and **GLEIWITZ, 253 metres.**—**10.30 a.m.,** See **Leipzig. 11.0,** Concert by the Silesian Philharmonic Orchestra: Overture, Die Fledermaus (Joh. Strauss); Introduction, Chorus and Dance from Das Modell (Suppé); Suite from Coppélia (Delibes); Waltz, Gold and Silver (Lehár); Overture, A Waltz Dream (O. Straus); Selection from Die Kaiserin (Fall); Polka, Feuerfest (Jos. Strauss); Selection from Liesbett (Künneke). **1.0,** Announcements. **1.10,** Agricultural Talk. **1.25,** Talk: Common Expressions in Political Economy. **1.40,** Talk: The Origin and Meaning of Carnival Customs. **2.0,** Radio Report of the 1933 German International Skating Championships. **2.30,** Programme for Children. **3.0,** Concert by the Station Orchestra, conducted by Franz Marszalek. Soloist: Hellmut Hallendorf (Tenor). Selection from Gaudeamus (Humperdinck); Ballet Music from Undine (Lortzing); Gondoliere (Ries); Slovak Dances (Felber); Waltz, Der Rosen Königin (Schicke); Offenbach Potpourri (Urbach). **4.50,** Talk by Dr. Paul Rohrbach: What I heard about Germany on my World Tour. **5.15** (approx.), See **Frankfurt. 6.0,** Hans Francke reads from his own Works. **6.30,** Weather for Farmers, followed by Report of the Silesian Winter Relief Committee. **6.40,** Military Band Concert. **7.45,** Sports Notes. **8.15,** Violin Recital by Alfred Wittenberg: Romance in G (Beethoven); Two Hungarian Dances (Brahms-Joachim); Le cygne (Saint-Saëns); Gartenmelodie (Schumann); An Springbrunnen (Schumann); Waltz (Field-Burmester); Mazurka, Obertass (Wieniavski). **8.45,** Mandoline and Guitar Concert. **9.35,** Time, Weather, News, Sports Notes and Programme Announcements. **10.0,** Orchestral Concert, relayed from **Vienna. 11.0** (approx.), Close Down.

BRNO

342 metres; 35 kW.—**11.5 a.m.,** Military Band Concert, conducted by Josef Hancl. March, The Soldier (Fucik); Overture, Lysistrata (Lincke); Selection from I Pagliacci (Leoncavallo); Melody (Potuznik); Waltz (Oberthor); Prague National Songs (Leopold); March (Hancl). **12.30 to 1.15 p.m.,** See **Prague. 2.30,** See **Prague. 3.30,** See **Moravska-Ostrava. 4.30,** Pianoforte Recital by Anna Skalicka. Three Dances (Smetana); Tarantella, Venice and Naples (Liszt). **5.0,** German Transmission; News, followed by E. T. A. Hoffmann Concert with an Introductory Talk by Erwin Felber, Songs by Otto Ruepp and Pianoforte Solos by Fritz Arndt. **5.45,** Talk on Dumping. **6.0,** See **Prague. 8.30,** See **Bratislava. 9.0,** See **Prague. 10.0** (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—**10.0 a.m.,** Concert by the Small Station Orchestra. **11.0,** Gramophone Records: Jubel-Ouvertüre (Weber); Symphony No. 40 (Mozart); Concerto in A Minor for Pianoforte (Grieg). **12 Noon,** Concert by Mickey's Club Jazz Attraction. **1.0 p.m.,** Le Journal Parlé. **1.10,** Concert, relayed from the Grand Hotel, Antwerp. **1.30,** The Fables of La Fontaine on Gramophone Records. **1.40,** Concert (contd.). **5.0,** Concert by the Radio Orchestra, conducted by Charles Walpot. In the interval at **5.30** (approx.), Football Results. **6.0,** Harp and Violin Recital by Mme. Flour and M. G. Béthune. **6.30,** Organ Recital by Louis Joos, relayed from the Carmelite Church, with Songs by Th. Mercier. **7.15,** Religious Address. **7.30,** Wireless News and Music Review. **8.0,** Concert by the Radio Orchestra. **8.45,** The Night of Friday the Thirteenth—Sketch (Désire Grevesse). **9.0,** Concert (contd.). **10.0,** Le Journal Parlé. **10.10,** Hot Jazz, with Commentary. **10.40,** Orchestral Concert, relayed from the Ancienne Belgique. **12 Midnight,** Close Down.

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW.—Programme in Flemish. **10.0 a.m.,** Classical Music on Gramophone Records. **11.0,** Concert by the Small Station Orchestra, conducted by P. Leemans. **12 Noon,** Concert, relayed from the Grand Hotel, Antwerp. **1.0 p.m.,** Le Journal Parlé. **1.10,** Concert by Mickey's Club Jazz Attraction. **5.0,** Dance Music from the St. Sauveur Palais de Danse. In the interval at **5.15,** Sports Results. **6.30,** Pianoforte Recital by Yvonne Bartholeyn. **7.0,** Gramophone Records: Suite, Pelléas et Mélisande (Fauré); Pavane pour une Infante défunte (Ravel). **7.15,** Religious Address. **7.30,** Music Review. **8.0,** Concert by the Brussels Wind Instrument Society: Sextet, Op. 6 (Tuille); Two Pieces for Flute, Oboe, Clarinet, Horn, and Bassoon (Ropartz); Suite for Flute, Oboe, Clarinet, Bassoon, and Pianotorte (Huybrechts). **8.45,** A. Thiry reads from his own Works. **9.0,** Concert by La Napolitaine, relayed from **Antwerp. 10.0,** Le Journal Parlé. **10.10,** Popular Music on Gramophone Records. **11.0,** Concert by the Penguin Club. **12 Midnight,** Close Down.

BUCHAREST

394 metres; 12 kW.—**9.15 a.m.,** Programme for Children. **9.30,** Bible Reading. **9.45,** Sacred Music. **10.0,** Concert by the Ionesco Orchestra. **11.0,** Popular Music on Gramophone Records. **11.45,** News and Time Signal. **12 Noon,** Light Music on Gramophone Records. **3.0,** Programme for Peasants. **4.0,** Concert of Light Music and Romanian Music by the Marco Orchestra. **5.0,** News and Time Signal. **5.10,** Talk. **5.25,** Concert by the Marco Orchestra (contd.). **6.0,** Talk on Romania: Her Pasture Lands. **6.40,** Popular Music on Gramophone Records. **7.0,** Time Signal. **7.2,** An Operetta in Three Acts (Fiechtenmacher). In the intervals: News.

BUDAPEST

550 metres; 18.5 kW.—Programme also relayed on **840 metres from 6.15 to 11.0 p.m.**—**8.0 a.m.,** News and Beauty Hints. **9.0,** Divine Service Relay. **10.0,** Catholic Service from the Church of the Sacred Heart, followed by Time, Weather, Announcements and Orchestral Concert. In the interval, Wireless Review. **1.0 p.m.,** Popular Music on Gramophone Records. **2.0,** Agricultural Talk. **2.45,** Educational Talk. **3.30,** News. **3.40** (approx.), Military Band Concert. **4.30,** Reading. **5.0,** Concert, relayed from **Miskolcz. 6.15,** Programme by F. Karinthy. **6.45,** Recital of Hungarian Folk Songs by the Gyula Csorby Cigány Orchestra, M. Bodan and Josef Cselenyi. **8.0,** News. **8.15,** Concert, relayed from the Café Ostende. **10.0,** Concert by the Kerntler Trio: Concerto No. 4, for Pianoforte, Violin and 'Cello (Rameau); Ballad and Dance (Molnar); Nocturne in E Flat, Op. 148, for Pianoforte, Violin and 'Cello (Schubert); Trio, Op. 101, in C Minor for Pianoforte, Violin and 'Cello (Brahms).

CASSEL.—See **Frankfurt.**

COPENHAGEN

281 metres; 0.75 kW.; and **KALUNDBORG, 1,153 metres;** 7.5 kW.—**9.0 a.m.,** Divine Service from the Garrison Church. **10.30,** Weather Forecast. **10.40,** News. **11.0,** Time and Chimes from the Town Hall. **11.5,** Concert by Mogens Hansen's Instrumental Ensemble. **12 Noon,** Talk in English: The Quakers. **12.20 p.m.,** Talk in German: Gustav Frenssen. **12.40,** Talk in French: Old French Types. **1.0 to 1.25,** Interval. **1.25,** Light Music on Gramophone Records. **1.55,** Programme for Children. **2.25,** Concert, relayed from the **Axelborg** Studio. **4.0** (also relayed by **Skamlebaek** on **31.51 metres),** Divine Service, relayed from the Castle Church, Christiansborg. **5.20,** Talk: The Peasant in Danish Literature, Henrik Pontoppidan. **5.50,** Weather Forecast. **6.0,** News. **6.15,** Time Signal. **6.17,** Sports Notes. **6.30,** Talk: Trade Schools and National Schools. **7.0,** Chimes from the Town Hall. **7.5,** Concert of Czech Music. **8.10,** Talk and Trio Concert. **8.55,** Light Music on Gramophone Records. **9.10,** News. **9.20,** Talk: Anecdotes about Great Musicians. **9.40,** Pianoforte Duets by Folmer Jensen and Ove Peters: Sonatina in C, Op. 66, No. 2 (Kuhlau); Characteristic March (Schubert). **10.0,** Dance Music from the Wivex Restaurant. In the interval at **11.0,** Time and Chimes from the Town Hall. **11.30** (approx.), Close Down.

CORK.—See **Athlone.**

DANZIG.—See **Heilsberg.**

DRESDEN.—See **Leipzig.**

DUBLIN.—See **Athlone.**

FECAMP

223 metres; 10 kW.—**12 Noon,** Radio Gazette. **12.30 p.m.,** News Bulletin. **12.40,** Concert for Invalids. **4.0 to 8.0,** Programme in English by the I.B.C. **4.0,** Programme for Children. **4.30,** Children's Club Concert. **5.0,** International Broadcasting Club Concert for Manchester Listeners. Blaze Away (Holman); Overture, Morning, Noon and Night (Suppé); O Maiden, my Maiden, from Frederika (Lehár); Overture, Zampa (Herold); Songs from The Belle of New York (Kerker); Colonel Bogey (Alford); Land of Hope and Glory (Elgar); For Valour; Selection from The Desert Song (Romberg); Why did you kiss my Heart awake, from Frederika (Lehár); Jolly fellow; El Relicario; Speak to me of love; The Manchester. **6.0,** Organ Recital; Potpourri of Popular Melodies; Song without Words (Tchaikovsky); Longing (Haydn Wood); Ca c'est Madrid (O'Henry); Broken Dreams (Spitalny); Berceuse de Jocelyn (Godard); Melody in F (Rubenstein); Waltz Potpourri. **6.30,** Russian Folk Music; Russian Folk Song and Dance (Traditional); The Red Sarafan (arr. Leontiev); Moonlight; Choir; The Twelve Robbers; In a Pine Forest (Traditional); Caucasian Gipsy Song; Choir; The Cossack Prisoners; Lovely Night (arr. Leontiev). **7.0,** Orchestral Concert. Overture, Tancred (Rossini); Prelude to Carmen (Bizet); Country Dance and the Merry-makers' Dance from the Nell Gwynn Suite (German); Overture, Stradella (Flotow); Ballet Music from Sylvia (Delibes). **7.30,** Orchestral and Vocal Concert. Selection

FEB. 19th **SUNDAY** *continued*

from Les Millions d'Harlequin (Drigo); Songs: (a) The Lass with the Delicate Air, (b) When the House is asleep, (c) Come back to Sorrento, (d) I hear you calling me, (e) Little Brown Owl, (f) One Morning very early; Old Spanish Song (Aubert). 8.0, Concert of Opera and Operetta Music. 9.0 till Close Down, Programme in English by the I.B.C. 9.0, Military Band Concert. Selection from Floradora; Paree (Padilla); Jungle Drums (Ketelbey); Valencia (Padilla); The Battle of Waterloo (Eckersberg); March, King Cotton (Sousa); Medley of British Songs. 9.30, Concert of Light Music. Selection from La Traviata (Verdi); Tenor Solo: Sigh no more Ladies (Stevens); Song: Bonnie Mary of Argyll (Traditional); Octet: Golliwog's Cakewalk (Debussy); Negro Spiritual: Sometimes I feel like a motherless Child (arr. Lawrence Brown); Baritone Solo: Drake's Drum (Stanford); Waltz Song from La Bohème (Puccini). 10.0, Light Orchestral and Vocal Concert. Over the Waves (Rosas); Songs (a) Bright Eyes (Reeves), (b) A Bachelor Gay (Tate); Waldteufel Memories (arr. Finck); Songs: (a) Marika (Collins), (b) If I were King (Coslow); Soldatenlieder (Gung'l). 10.30, Concert of Light Music: Just a little Home for the Old Folks; I'm sure of Everything but you; What more can I ask; Brighter than the Sun; Night after Night; Wheezy Anna; I can't believe it's true; Please handle with care; In a shanty in old Shanty Town. 11.0, Orchestral Concert: Selection from The Beggar's Opera (Gay); In the Sudan (Sebek); Suite, Americana (Thurban); Black Eyes (Ferraris); Fairy on the Clock (Myers); The Wedding of the Rose (Jessell). 11.30, Music by an Accordion Band: Selection from Carmen (Bizet); C'est un petit nid (Eblinger); J'aime la musique (Parsons); Mona Lisa (Carter); Selection from Faust (Gounod); La Javanette (Bozi); Les bas a pointes (Lefebre); Whistling Waltz (Reeves). 12.0 **Midnight,** International Broadcasting Club Concert for Manchester Listeners; Blaze Away (Holman); Overture, Morning, Noon and Night (Suppé); O Maiden, my Maiden, from Frederika (Lehár); Overture, Zampa (Herold); Songs from The Belle of New York (Kerker); Colonel Bogey (Alford); Land of Hope and Glory (Elgar); For Valour; Selection from The Desert Song (Romberg); Why did you kiss my Heart awake, from Frederika (Lehár); Jolly Fellow; El Rilicario; Speak to me love; The Manchester. 1.0 a.m. **(Monday),** Pianoforte Recital: Favourite Tunes; I found you (Noble); One Night alone with you (Jeffreys); Let love take care of you (van Phillips); Hot Scotch (Peterson); Selection from The Big Pond; Squirrel Dance (Elliott Smith); More Favourite Tunes. 1.30, Popular Songs: I don't wanna go home (Gilbert); Never swat a Fly (de Sylva); Eleanor (Hanley); Concertina Solo: Lopeziana (Alter); I've got a feeling (Nicholls); Sittin' on a Five Bar Gate (Hargreaves); I'm in the Market for you (McCarthy); Concertina Solo: Marilyn (Alter). 2.0, Dance Music. 2.57, I.B.C. Good-night Melody. 3.0 (approx.), Close Down.

FLENSBURG.—See **Hamburg.**

FLORENCE.—See **Turin.**

FRANKFURT

259 metres; 17 kW.; and **CASSEL, 245.9 metres.**—10.30 a.m., See **Leipzig.** 11.0, See **Stuttgart.** 11.15, Concert. 12.5 p.m. (approx.), Concert from **Langenberg.** 1.20, Rural Programme—Three Talks. 2.30, Programme for Young People. 3.30, Dialogue: Comradely Help. 3.55, Military Band and Choral Concert from **London.** 5.15, Part Relay of the Women's Session of the Mainz Carnival Society, from the Stadthalle, **Mainz.** 9.30, Time, News, Weather, and Sports Notes. 10.0, Concert from **Munich.** 11.0 (approx.), Close Down.

FRÆDRIKSSTAD.—See **Oslo.**

FREIBURG.—See **Stuttgart.**

GENEVA.—See **Radio-Suisse Romande.**

GENOA.—See **Turin.**

GLEIWITZ.—See **Breslau.**

GOTEBORG.—See **Stockholm.**

GRAZ.—See **Vienna.**

HAMAR.—See **Oslo.**

HAMBURG

Call ha (in Morse), **372 metres;** 1.5 kW. Relayed by **Bremen, 269.8 metres; Flensburg, 227.4 metres; Hanover, 566 metres;** and **Kiel, 232.2 metres.**—10.30 a.m., See **Leipzig.** 11.0, Concert from the Deutsche Haus, Flensburg. 11.55 (in an interval), Time and Weather. 1.0 p.m., Love in Everyday Life—A Play (Alfred Merwick). 2.0, Programme for Children. 2.35, Reading of Modern Fairy Tales. 3.0, Schleswig-Holstein Programme by the Norag Quartet and Bernhard Jackschtat (Songs). 3.30 (from **Bremen**), Wind Instrument Concert from the Astoria, Oldenburg. 4.30 (from **Kiel**), Chinese Plays—Programme relayed from Kiel University Literary and Dramatic Institute. 5.30, Part Relay of the Women's Session of the Mainz Carnival Society from **Frankfurt.** 6.30, Norag Sound Service — Ju-Jitsu versus Boxing and Wrestling. 6.40, Sports Notes. 6.55, Weather Report. 7.0 (from **Bremen**), The Bi-Centenary of the Oldenburg Landestheatre—Gala Concert, conducted by Prof. Abendroth: Prelude to The Mastersingers (Wagner); The Second Symphony in D (Brahms); Fifth Symphony in C Minor (Beethoven). News in the interval. 9.0, Time and Second News. 9.10, Topical Talk. 9.30, Carnival Programme —Dances in Costumes and Masks. The Norag Chamber Orchestra, the Scarpa Orchestra, and the Norag Artists.

HANOVER.—See **Hamburg.**

HEILSBERG

276.5 metres; 60 kW.; and **DANZIG, 453.2 metres.**—10.0 a.m., Concert of Request Music: Tony Jaeckel (Soprano and Lute), Kees Veening (Baritone), and Gerhard Riechel (Violin). 10.40, Reading: Hymns to Germany (Gertrud von Le Fort). 11.0, See **Berlin (Witzleben).** 1.0 p.m., Chess Lesson. 1.30 (from **Danzig**), Talk for Young People. 2.0, The Princess and Death—A Fairy Radio Play (Alexius Rothgaengel). 2.40, Concert by the Small Station Orchestra, conducted by Eugen Wilcken. In the interval at 3.30 (approx.), Racing Results. 4.30 (from **Danzig**), Erwin Dressel Song Recital by Bruno Korell (Tenor). 5.0, Musical Handwriting—an Interview with the Inventor, Rudolf Pfenninger. 5.30 (from **Danzig**), The Danzig Painter-Poet Robert Reinick—Memorial Programme. Talk: From the Life of Robert Reinick. Children's Songs by Gustl Heinrichsdorff. 6.0, East Prussia's Musical Past—In the Time of Duke Albert. Concert, relayed from Königsberg Castle. The University Musical Society, Members of the Small Station Orchestra and Soloists: Charlotte Bonsa-Piratzky (Soprano), Dr. Erwin Ross (Bass) and Margarete Schuchmann (Spinet); In Gottes Namen fahren wir (Stoltzer); Es ist das Heil uns kommen her (Walther); Tischgebet (Kugelmann); Nun lob' mein Seel' den Herrn (Derselbe); Non moriar sed vivam (Senfl). Laudate Deum (Eckel); Deutsche Lieder (Isaac-Greitter-Finck;); Maria zart (Schlick); Dein lieblich Bild (Schlick); Dances for Spinet; Two Folk Songs (Senfl); Trinklied (Dietrich); Dances for Wind Instruments; Das Lied von den Strassenrufen (Kugelmann); Tanzlied (Senfl). 7.0, Sports Notes. 7.15, Concert of Carnival Music. 9.0, News and Sports Results. 9.10 (approx.), Report on the East Prussian Ski-jumping Competition, relayed from **Lützen** (on Gramophone Records). 9.20 (approx.), See **Vienna.** 11.0 (approx.), Close Down.

HILVERSUM

Announced **HUIZEN, 296.1 metres;** 20 kW (7 kW up to **4.40 p.m.**).—11.55 a.m. to 4.40 p.m., Programme of the Catholic Radio Society (K.R.O.). 11.55, Concert by the K.R.O. Boys, conducted by P. Lustenhouwer: Soloist: J. Mossel (Songs). 12.40 p.m., Political Talk. 1.0, Concert (contd.). 1.50, Review of New Books. 2.10, Concert by the K.R.O. Orchestra, conducted by M.v.'t Woud. 4.0, Programme for Invalids. 4.40 to 7.25, Programme of the Christian Radio Society (N.C.R.V.). 4.40, Sacred Music by a Mixed Vocal Quartet. 5.30, Divine Service from a Church in Amstelveen. 7.25 till Close Down, K.R.O. Programme. 7.25, Talk. 7.45, Football Results. 7.50, Concert by the K.R.O. Orchestra, conducted by Johan Gerritsen: Selection from The Bartered Bride (Smetana); Ein Märchen (Nicodé); Auf dem Lande (Nicodé); Donauwellen (Ivanovici). 8.10, Agricultural Talk. 8.40, News Bulletin. 8.45, Concert by the K.R.O. Orchestra, conducted by J. Gerritsen: Overture, Alfonso und Estrella (Schubert); Symphony in G, No. 6 (Haydn). 9.10, Gramophone Records. 9.20, Concert by the K.R.O. Orchestra. 10.30, Epilogue. 10.40 (approx.), Close Down.

HORBY.—See **Stockholm.**

HUIZEN

Announced **HILVERSUM, 1,875 metres;** 8.5 kW.—11.40 a.m. to 4.40 p.m., Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O). 11.40 a.m., Time Signal. 11.41, Concert of Light Music by Kovacs Lajos and his Orchestra, with Songs by Bob Scholte and a Girls' Choir. 1.40 p.m., Weekly Book Talk. 2.10, Wagner Concert by the Concertgebouw Orchestra, conducted by Erich Kleiber. Soloist: J. Urlus. Eine Faust-Ouvertüre; Selection from Lohengrin; Overture, The Flying Dutchman; Selection from Tannhäuser. 3.40, Talk. 4.10, Variety Music on Gramophone Records and Sports Notes. 4.40 to 7.40, Programme of the Workers' Radio Society (V.A.R.A.). 4.40, Programme for Children. 5.40, Concert by a V.A.R.A. Children's Choir, conducted by Hugo de Groot, Gramophone Records in the intervals. 5.55, Concert by De Fliereffluiters, conducted by Hugo de Groot. Soloist: Esther Philipse (Songs). In the interval at 6.30, The Adventures of Messrs. Wakker and Tropenduit. 7.40 till Close Down, A.V.R.O. Programme. 7.40, Time Signal. 7.41, News Bulletin. 7.55, Concert by Jack Payne and his Band. 8.40, A Radio Play. 9.10, Concert by the Wireless Orchestra, conducted by Nico Treep. Soloists: Boris Lensky (Violin), Pierre Palla (Pianoforte), and Henk Viskil (Song). 11.10, Light Music on Gramophone Records. 11.40 (approx.), Close Down.

INNSBRUCK.—See **Vienna.**

KALUNDBORG.—See **Copenhagen.**

KAUNAS

1,935 metres; 7 kW.—5.0 p.m., Time, Weather and Political Review. 5.20, Talk for Soldiers. 5.50, Variety Programme. 6.10, Talk on Gardening. 6.30, Popular Concert. 7.20, Archæological Talk. 7.40, Variety Programme. 8.0, Talk. 8.20, Popular Concert. 9.30 (approx.), Close Down.

KIEL.—See **Hamburg.**

KLAGENFURT.—See **Vienna.**

KOSICE.—See **Prague.**

LANGENBERG

473 metres; 60 kW.—8.0 a.m., Catholic Service. 9.15, Programme for Invalids. 10.0, Talk: German Landscape and German Art. 10.30, See **Leipzig.** 11.0, Talk: The Effect of Fashion on the Silk-weaving Industry. 11.20, Talk: Musicians who died young—Norbert Burgmüller—IV. 11.45, Talk: The Week's Music. 12 **Noon,** Orchestral Concert. 1.30, p.m., Shorthand Practice. 2.0, See **Stuttgart.** 2.35, Chess Lesson. 2.55, Talk on Spitzweg on the 125th Anniversary of his Birth. 3.15, Poetry Reading: Friedrich Schnack. 3.30, See **Stuttgart.** 3.55, Wind Instrument Concert from **London.** 5.15, See **Frankfurt.** 6.0, The World on Gramophone Records: German Song in Brazil. 6.30, Talk: The Polish Corridor Problem in Foreign Literature. 6.50, Sports Report. 7.0 to 9.1, Variety Programme. 7.45, Concert by the Station Orchestra, conducted by Büschkötter. Soloists: Paul Eggert (Pianoforte) and Bronislaw Mittmann (Violin): Burlesque in D Minor (Strauss); La valse (Ravel); Bolero (Ravel); Violin Concerto in D (Tchaikovsky); In an Interval from 8.0 to 8.25, Reading: Die Hollandreise (Wilhelm Schäfer). 9.5, News and Sports Notes. 9.20 (approx.), Report on the Halle Swimming Championships, from **Leipzig** (on Gramophone Records). 9.45, See **Munich.** 11.0 (approx.), Close Down.

LAUSANNE.—See **Radio-Suisse Romande.**

LEIPZIG

389.6 metres; 120 kW.; and **DRESDEN, 319 metres.**—10.30 a.m., Leichgesinnte Flattergeister—Cantata (Bach), by the Municipal and Gewandhaus Orchestras, the Choir of St. Thomas', and Soloists. 11.0, Concert by the Orchestra of the Friedrichstheater, Dessau. 1.0 p.m., Weather and Time. 1.5, Programme Announcements. 1.25, Agricultural Hints. 1.35, Concert by a School Orchestra. 2.0, Johannes Weinrich reads from his own Works. 2.30, Trio for Pianoforte, Violin, and 'Cello, Op. 102 (Max Reger). 3.0, Das Mädchen aus der Fremde (The Girl from Abroad)—Comedy (Korfiz Holm). 4.0, Concert of Light Music by the Emdé Orchestra. 5.0, Talk, with Gramophone Illustrations; Haydn's Spieluhr. 5.35, Choral Concert. 6.5, Sports Reports: (a) Part Relay of the International Ski Championships from Stuttgart, (b) Part Relay of the Swimming Tournament in Halle, (c) Part Relay of the Czechoslovak Ski Championships from Breslau (on Gramophone Records). 7.0 to 8.45, See **Vienna.** 8.45, Topical Talk. 9.5, News Bulletin. 9.20 (approx.), Concert from **Vienna.** 11.0 (approx.), Close Down.

LINZ.—See **Vienna.**

MADRID

ARANJUEZ (EAQ), 30.43 metres; 20 kW.—10.30 p.m., Variety Concert. 10.45, Humorous Talk. 11.0, Variety Concert (contd.). 11.35, Talk. 11.40, Light Music. 12 **Midnight** (approx.), Close Down.

MADRID

UNION RADIO; Call EAJ7, 424.3 metres; 2 kW.—8.0 to 9.0 a.m., Topical Review. 2.0 p.m., Chimes, Time, Theatre Review and Concert by the Artys Orchestra. 4.0 to 7.0, Interval. 7.0, Chimes and Dance Music, from the Hotel Ritz. 7.30 (in the interval), Agricultural Talk. 8.30 to 9.30, Interval. 9.30, Chimes, Time, Baritone Song Recital by José Angerri, Interlude by Ramon Gomez de la Serna and Violin Recital by Manuel Ferez Diaz. 12.0 **Midnight,** Chimes and Close Down.

MALMO.—See **Stockholm.**

MILAN.—See **Turin.**

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—11.5 a.m., See **Brno.** 12.30 to 1.15 p.m., See **Prague.** 2.30, See **Prague.** 3.30, Concert by the Station Orchestra, conducted by B. Tyrdy. Part I, Grieg Music. Part II, Dance Music. 4.30 to 5.45, See **Prague.** 6.0, See **Prague.** 8.30, See **Bratislava.** 9.0, See **Prague.** 10.0 (approx.), Close Down.

MOSCOW

TRADES UNION; 1,304 metres; 100 kW.—4.0 p.m., News. 4.10, Announcements. 4.30, Tales about Machines. 5.30, Variety Programme, relayed from the Conservatoire. 8.0, Talk in English: How the face of Russia has been changed through the Revolution. 8.55, Time Signal. 9.5, Press Review.

MOTALA.—See **Stockholm.**

MUHLACKER.—See **Stuttgart.**

MUNICH

533 metres; 60 kW. Relayed by **Augsburg** and **Kaiserslautern, 560 metres;** and **Nürnberg, 239 metres.**—10.30 a.m., See **Leipzig.** 11.0, Running Commentary on the German International Ski-ing Championship at Baiersbronn. 11.15, See **Frankfurt.** 12.5 p.m., Time, Weather and Programme Announcements. 12.15, Agricultural Talk. 12.35, Light Music on Gramophone Records. 1.25, Elementary Chess Lesson. 2.5, Programme for Children. 2.30, Championships of the German Winter Sports Union in Czechoslovakia, relayed from **Römerstadt.** 3.5, Upper Bavarian Philosophy—Literary and Musical Programme. 3.50, Orchestral Concert, conducted by Georg Ebner. 5.5, Talk: Fifty Years of Religious Freedom in Japan. 5.25, An Appeal for the Winter Relief Fund. 5.45, Hugo Wolf Song Recital for the Thirtieth Anniversary of his Death: Karl Erb (Tenor), Martha Martenen (Soprano), Max Hartmann (Baritone), and Richard Staab (Pianoforte): Gesellenlied; Biterolf; An die Geliebte; Nixe Binsefuss; An den Schlaf; Der Musikant; Cophtisches Lied No. 2; Epiphanias; St. Nepomuks Vorabend; Der heilige Josef singt; Ach, du Maien war's; Herz verzage nicht geschwind; O, wär dein Haus; Gesegnet sei das Grün; Ich hab' in Penna einen Liebsten wohnen; Wohl denk ich oft; Alles endet, was entstehet. 6.35, Report on the German International Ski-Jumping Championship at Mittelthal, followed by Weather and Sports Notes. 7.0, See **Vienna.** 8.20, Orchestral Concert, conducted by Karl List: Soloist, Anita Oberländer (Soprano); Carnival Overture (Reuter); Song, Wie nahte mir der Schlummer, from Der Freischütz (Weber); Scherzo capriccioso (Dvorak); Aria from The Force of Destiny (Verdi); The Nutcracker Suite (Tchaikovsky). 9.20, Time, Weather, News and Sports Notes. 9.45, Serenade, conducted by Erich Klosz. 11.0 (approx.), Close Down.

NAPLES.—See **Rome.**

NOTODDEN.—See **Oslo.**

OSLO

1,083 metres; 60 kW. Relayed by **Fredrikstad, 365.8 metres; Hamar, 574.7 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres;** and **Rjukan, 447.1 metres.**—10.0 a.m., Divine Service. 4.0, Concert by the Station Orchestra. 5.0, Talk. 5.20, Dance converts—Play (Sacha Guitry). 6.0, Jazz Music on Gramophone Records. 6.35, Weather and Press review. 6.30, Concert of Light Music. Soloist: Trygve Christiansen (Violin). 7.0, Time Signal. 7.1, Recitations. 7.30, Choral Concert of Sacred Music, relayed from the Fagerborg Church. Soloists: Hans Tveten (Baritone) and Arild Sandvold (Organ). Herre hör' uns (Mendelssohn); Gott in der Natur (Schubert); Psalm (Ulfrstad); Hymn (Haarklou); Ave Verum (Mozart); Der Herr ist König (Büning); Pilgrims' Chorus from Tannhäuser (Wagner). 8.40, Weather and News. 9.0, Topical Talk. 9.15, Instrumental Concert of Popular Music. 10.15, Dance Music on Gramophone Records.

OSTERSUND.—See **Stockholm.**

PALERMO

542 metres; 3 kW.—9.25 a.m., Bible Reading. 9.40, Sacred Music. 10.5, Talk on the Corn and Olive-Growing Competitions. 11.5, Giornale Radio. 12 **Noon to 1.0 p.m.,** Light Music, relayed from the Olympia Tea Rooms. 12.30 (in an interval), Time Signal, Announcements, and Weather Forecast. 4.30 to 5.30, Variety Concert by the Station Orchestra. 7.0, Dopolavoro Notes and Giornale Radio. 7.20, Sports Notes. 7.30, Time Signal and Announcements. 7.45, The Ninth Symphony in D Minor (Beethoven). 8.45, Popular Songs. 9.55, News Bulletin.

PARIS

EIFFEL TOWER; Call FLE; 1,445.7 metres; 13 kW. Time Signals (on **2,650 metres**) at 9.26 a.m. and 10.26 p.m. (Preliminary and 6-dot Signals).—12.30 p.m., Programme relayed from **Paris (Ecole Supérieure) (447.1 metres).** 1.0 to 2.0, Concert by the Rex Orchestra. 5.45, Le Journal Parlé. 6.45, Programme for Children. 7.20, Weather Report. 7.30, Gramophone Concert: Ballet Music from Sylvia (Delibes); Aria (Delibes); Ballet Music from Naïla (Delibes); Où va la jeune Hindoue, from Lakmé (Delibes); Selection from Mignon (Thomas); Waltz-Mazurka, La Freya (Thomas); Selection from Les Saltimbanques (Ganne); Lake Como (Galos); Selection from Il est charmant (Moretti); Dornroschens Brautfahrt (Rhode); Heinzelmannchens Wachtparade (Noack); Xylophonia (Green); Valse amoureuse (Sylviano); Arrongancia andaluza (Bruguera); Selection from La Vie Parisienne (Offenbach). 9.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—9.45 a.m., Bible Reading. 10.0, News. 10.5, Sponsored Concert. 11.5, Sponsored Pro-

gramme. 11.40, Sponsored Gramophone Concert. 12.15 p.m., Sponsored Concert. 12.45, Half-an-Hour of Fantasy by Paul Weill. 1.15, Interval. 1.30, Sponsored Programme. 2.0, Sponsored Concert. 2.30, Interval. 6.45, Journal Parlé. 6.50, Sports Notes. 7.0, Catholic Review. 7.30, Orchestral Concert of Light Music. 8.30, Interval. 8.45, Sponsored Concert with Gramophone Records. 10.30, News.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—7.45 a.m., Light Music on Gramophone Records. 8.0, Press Review and Weather. 8.30, Physical Culture. 10.0, Elementary Book-keeping Lesson. 10.40, Spanish Lesson. 11.30 to 12 Noon, Programme in English by the I.B.C.. Gramophone Concert: In a Monastery Garden, by the Commodore Grand Orchestra; Let's have a Party, by Leslie Holmes and his Smiling Voice; Slow Fox-trot, Just a Little Home for the Old Folks, by the Blue Mountaineers; Comedy Waltz, Puss! Puss! Puss!, by the Blue Mountaineers; Charlie makes whoopee, Part 1, by Charlie Higgins (Comedian), assisted by Bert Bray; Waltzland, Part 2, by Roma's Accordion Band, with Vocal Chorus; Horses carry Tails, by Monte Hunter, with Instrumental Accompaniment; Fox-trot, Please, from The Big Broadcast, by Jack Payne and his Band. 12 Noon, Religious Address by the Reverend Father Padé. 12.20 p.m., Sacred Music. 12.30, Bilboquet as a Second-hand Bookseller. 12.45, Press Review, News and Weather. 1.0, Orchestral Concert. 1.30 to 3.30, Programme in English by the I.B.C. 1.30, Gramophone Concert: Maria, Mari!, by Galla-Rini (the Wizard of the Accordion); I'm sure of everything but you, by Sam Browne; Just an Echo in the Valley, by Bing Crosby; This is no Dream, by Ed. Lloyd and his Orchestra; Rumba, The Voodoo, by Vincent Lopez and his Hotel St. Regis Orchestra; Till to-morrow, by Nick Lucas (The Crooning Troubadour); Dinah, by Bing Crosby and the Mills Brothers; Brighter than the Sun, by Maurice Winnick and his Orchestra. 2.0, Gramophone Concert: Rock-abye your Baby, by Al Jolson, with Guy Lombardo and his Royal Canadians; Di Te, by Alfred Piccaver (Tenor); Brother, can you spare a Dime?, by Bing Crosby; The Wise old Owl said "Hoo!", by Jenny Howard; Dear Love, my Love, by Alfredo Campoli and his Salon Orchestra; Wheezy Anna, by Bobby Brown and his Accordion Band; Sing, red Sun, by Enid Cruickshank (Contralto); Neapolitan Nights, by Paul Godwin and his Orchestra; First Hungarian Dance, by the Berlin Philharmonic Orchestra, conducted by Wilhelm Furtwangler; Out of the Darkness, by The Street Singer; Here lies Love, by Harold Ramsey at the Wurlitzer Organ at the Granada Cinema, Tooting. 3.0, Concert. Fred Adison and his Band: One-step, Crazy People; Slow Fox-trot, Hummin' to myself; Selection from Countess Maritza (Kálmán); Songs by Alexandra Livejinska: (a) Say it isn't so, (b) Viens dans mes bras; Waltz, Wiener Blut (Joh. Strauss); One-step, I don't want to go to Bed. 3.30, Orchestral Concert. 4.0 to 6.0, Programme in English by the I.B.C. 4.0, Tea-Time Variety Hour, Mr. S. H. C. Williams announcing. 5.0, Variety Hour. Announcer: Mr. Glynne Williams, Foundation Member No. 20 of the International Broadcasting Club. 6.0, Variety Concert. 6.30 to 8.0, Programme in English by the I.B.C. 6.30, Concert of Light Music. 7.0, Film Fans' Hour, Mr. S. H. C. Williams announcing. 8.0, Music Hall Programme. The Orchestra, conducted by Maurice André. Soloists: Yvonne Regis and M. Reger (Songs). In the intervals at 8.0, News Sport Notes and Weather, and at 9.15, Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC, KDKA, 306 metres; 25 kW. Relayed by **W8XK** on **48.86 metres** and **25.27 metres.**—9.0 p.m., Temple of Song, from **New York.** 9.30, Vesper Services from Shadyside Presbyterian Church, Pittsburgh. 10.30, Pages of Romance, from **New York.** 11.0, Sealed Power, from **New York.** 11.30, Time Signal. 11.31, Weather Report. 11.32, Teaberry Sport Review. 11.37, Press News Reeler. 11.42, Strange Facts. 11.44, Temperature Report. 11.45, Programme to be announced. 12 Midnight, Time Signal and Westinghouse Concert. 12.30 to 3.45 a.m. (Monday), New York Relay. 12.30 a.m., Great Moments in History. 1.0, Russian Galeties. 1.30, Mexican Symphonic Marimba Orchestra. 2.0, Twenty Thousand Years in Sing Sing. 2.30, Walter Winchell. 2.45, Jubilo—Singer of the Lonesome Road. 3.0, D. W. Griffith's Hollywood. 3.15, Real Silk. 3.45, Jean Wald and her Vagabonds. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.15, Press Last Minute News. 4.20, Alexander Roy (Tenor). 4.30, Jesse Crawford (Organist) from **New York.** 5.0, Time Signal and Goodnight.

PORSGRUND.—See **Oslo.**

FEB. 19th SUNDAY *continued*

PRAGUE

488.6 metres; 120 kW.—9.25 a.m., Jaroslav Vrchlicky Memorial Programme on the Poet's Eightieth Birthday—Recitations, Talk and Music, relayed from the Town Hall. 10.25, Quartet Concert. 11.0, Chimes from the Church of St. Loudmila. 11.5, See **Brno.** 12.30 p.m., Agricultural Talk. 1.15 to 1.25, Talk: Pensions in Yugoslavia. 2.30, Running Commentary on the International Ice Hockey Championship from the Winter Stadium. 3.30, See **Moravská-Ostrava.** 4.30, Talk: The American Skyscrapers. 4.45, Popular Music on Gramophone Records. 5.0, German Transmission: Five One-Act Plays. 5.45 to 6.0, Interval. 6.0, Uncle Tom's Cabin—a Sound Film (Karel Seidl) in the Studio. 7.30, Running Commentary on the International Ice Hockey Championship (continued). In the interval at 8.0, Time. 8.30, See **Bratislava.** 9.0, Time Signal. 9.2, News and Sports Notes. 9.15, Running Commentary (contd.). 10.0 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; **LAUSANNE, 680 metres;** and **GENEVA, 760 metres.**—8.55 a.m. (from **Lausanne**), Chimes. 9.0 (from **Lausanne**), Protestant Service. 10.0, Light Music on Gramophone Records. 11.0 (from **Geneva**), Literary Talk. 11.30, News and Weather Forecast. 11.40 to 1.0 p.m. (from **Geneva**), Gramophone Records of Variety Music. 5.30 (from **Geneva**), Catholic Address. 6.0 (from **Bulle**), Talk: The Art Traditions of Fribourg and District. 6.20 (from **Bulle**), Popular Songs. 6.40 (from **Lausanne**), Sports Notes and News. 7.0 (from **Bulle**), Concert by the Bulle Municipal Orchestra, conducted by M. Radraux. 7.45, Concert by the Radio Orchestra. 9.0, News and Weather. 9.10 (from **Geneva**), Talk: The Work of the League of Nations. 9.25 (approx.), Close Down.

RJUKAN.—See **Oslo.**

ROME

Call 1RO, 441 metres; 50 kW. Relayed by **Naples, 319 metres;** and **2RO, 25.4 metres.**—9.10 a.m., Sports Notes and Amusement Guide. 9.30, Agricultural Report. 9.45, Bible Reading. 10.0 to 11.0, See **Turin.** 11.30, Orchestral Concert. In the interval at 12 Noon, Time and Announcements. 12.30 to 1.30 p.m., See **Turin.** 2.45 (Naples), Programme for Children, followed by Weather and Sports Notes. 3.0, Football Results. 4.0, Concert conducted by Karl Elmendorf, relayed from the Politeama Fiorentino. Sports Notes in the interval. 6.30, Sports Notes and News. 7.0, Time and Announcements. 7.45, Orchestral Concert, conducted by Riccardo Santarelli, with Arrigo Serato (Violin); Concerto grosso in F Minor (Locatelli); Concerto in E for Violin and Orchestra (Bach); Talk: Across Rome; Concerto in D for Violin and Orchestra (Beethoven); Dances from William Tell (Rossini). News after the Programme.

SALZBURG.—See **Vienna.**

SCHENECTADY

GENERAL ELECTRIC COMPANY, WGY, 379.5 metres; 50 kW. Relayed at intervals by **W2XAF** on **31.48 metres** and by **W2XAD** on **19.56 metres.**—7.0 p.m. till Close Down, **New York** Relay. 7.5, Musical Programme. 7.15, Clyde Doerr and his Saxophone Octet. 7.30, Moonshine and Honeysuckle. 8.0, Wayne King's Orchestra. 8.30, Hour of Worship. 12 Midnight, Harmonica Rascals. 12.15 a.m. (Monday), Wheatenaville. 12.30, Pickens Sisters—Harmony Trio. 12.45, Smith Brothers Programme. 1.0, Chase and Sanborn Hour. 2.0, General Electric Sunday Circle Concerts. 2.30, American Album of Familiar Music.

SCHWEIZERISCHER LANDESSENDER

BEROMUNSTER; 459 metres; 60 kW.; **BASLE, 244.1 metres;** and **BERNE, 245.9 metres.**—9.0 a.m. (from **Berne**), Catholic Address. 9.45 (from **Lugano**), Benedicamus Domino (Perosi) by the St. Cecilia Choir. 10.25 (from **Berne**), Dr. Hans Mühlestein reads from his Book Jürg Jenatsch. 11.0, Concert by the Radio Orchestra. 11.28, Time and Weather. 11.30, News Bulletin. 11.40, Concert by the Radio Orchestra. 12.30 p.m. (from **Berne**), Concert of Marches. 1.0 (from **Berne**), Talk: The Production of Pure Milk. 1.30 to 2.30, Interval. 2.30, A-Cappella Songs on Gramophone Records. 3.0 (from **Berne**), Talk with Gramophone Illustrations: From the Minuet to the Rumba. 3.30, Gramophone Dance Music. 4.0, Weather. 4.5 to 5.30, Interval. 5.30 (from **Berne**), Talk in French: French Literature from 1820—1930—Symbolism, with Readings from the Works of Baudelaire, Verlaine, Mallarmé, de Régnier, Verhaeren, Maeterlinck and Péguy. 6.0, Time, Weather and Sports Notes. 6.10 (from **Berne**), Rural Programme by the Edelweiss Yodelling Club and the Zwahlen Peasant Orchestra, with Variety Items. 7.10 (from **Berne**), Talk: Angelica Kauffmann—the Friend of Herder

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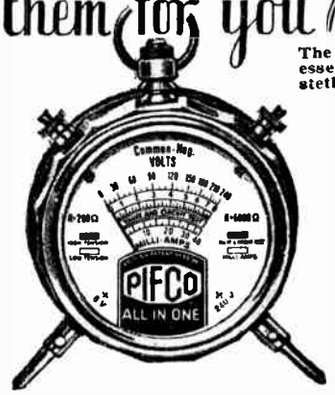

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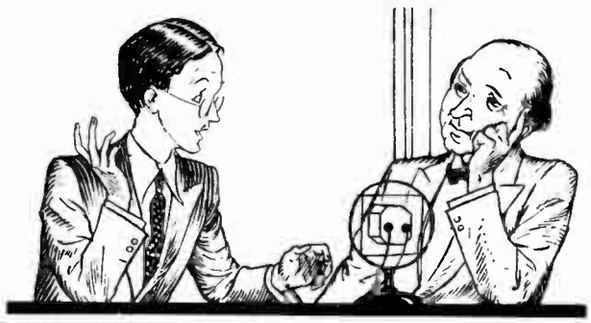

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and Goethe. **7.40** (from **Berne**), Unfamiliar Songs by Brahms, by Marianne Raaflaut (Soprano), Eva von Känel (Contralto), Erwin Tüller (Tenor) and Ernst Schläfli (Baritone), with the Radio Orchestra, conducted by Kurt Joss. **8.30**, Weather and News. **8.40**, Concert of Operetta Music by the Radio Orchestra. **9.5** (from **Berne**), The Séance—an Experiment. **9.15**, Sports Notes. **9.25** (approx.), Close Down.

SOTTENS.—See **Radio-Suisse Romande.**

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by **Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,348 metres; Ostersund, 770 metres;** and **Sundsvall, 542 metres.**—**10.0 a.m.**, Divine Service Relay. **11.45**, Weather and Ice Report. **1.30**, Symphony Concert. **3.0**, Dialogue. **3.45**, Popular Music on Gramophone Records. **4.5**, Programme for Children. **4.30**, Talk: Swedish People in Italy and France. **5.0** (from **Sundsvall**), Evensong. **6.15**, Weather and News. **6.30**, There's always Juliet—Comedy in Three Acts (John van Druten). **8.0**, Concert of Opera Music by the Station Orchestra. **8.45**, Weather and News. **9.0**, Concert by the Station Orchestra. Soloists: Ernst Törnqvist (Violin) and Sigurd Rydberg (Oboe); Concerto in D Minor for Violin, Oboe and String Orchestra (Bach); German Dances (Schubert); The Moldau (Smetana); Invitation to the Dance (Weber); Hungarian Rhapsody No. 1 (Liszt). **10.0** (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—**9.0 a.m.**, Orchestral Concert of Classical Music, conducted by Maurice de Villers. **10.0**, Protestant Service. **11.15**, Popular Music on Gramophone Records. **11.30**, Catholic Service in German. **12 Noon**, Debussy Concert on Gramophone Records. **12.45 p.m.**, News. **1.0**, Time. **1.1**, Ballet Music on Gramophone Records. **2.0**, Gardening Talk in French. **2.15**, Interval. **2.30**, Symphony Concert, conducted by Henri Tomasi, relayed from **Paris.** **4.30**, Pasdeloup Symphony Concert, relayed from the Théâtre des Champs-Elysées, Paris. **6.45**, Medical Talk. **7.0**, Sports Notes. **7.15**, Popular Music on Gramophone Records. **7.30**, Time and News. **7.45**, Lottery Results. **8.0**, Athalie—Play in Five Acts (Racine—Music by Mendelssohn). **10.30**, Popular Music on Gramophone Records. **11.0**, Quintet Concert, conducted by Jean Clergue, relayed from **Radio Coloniale, Paris (25.63 metres). 12 Midnight** (approx.), Close Down.

STUTTGART

MUHLACKER; 360.5 metres; 60 kW.; and **FREIBURG, 570 metres.**—**10.30 a.m.**, See **Leipzig. 11.0**, Radio Report from Baiersbronn, Freudenstadt of the German International Ski Championship—Women's Ski Jumping. **11.15**, Chamber Music: Sonata Didone abandonata (Tartini, arr. Henri Marteau); Partita in C Minor, Op. 43, No. 3 for Flute and Viola (Henri Marteau); Sonata in D for Violin, Op. 91, No. 2 (Reger). **12 Noon**, Reading. **12.15 p.m.**, Gramophone Concert of Light Music. **1.0**, Agricultural Talk. **1.30**, Radio Report of the German International Ski Championship. Ski Jumping at the Murgtalschanze in Mitteltal. **2.30**, Talk: Adventurers. **3.0** (from **Freiburg**), Concert of Light Music by the Freiburg Concert Orchestra, conducted by Fried. **3.55**, Choral and Band Concert, relayed from **London. 5.0**, Radio Report of the German International Ski Championship. Announcement of the Winner, from the Market Square, Freudenstadt. **5.30**, Sports Notes. **5.45**, Radio Report from Mainz. **7.5**, Concert by Edith Lorand and her Chamber Orchestra, relayed from the Liederhalle. Part I: Classical Music. Part II.: National Dances. Part III: Viennese Dances. **9.0**, Time. News. Weather, Programme Announcements and Sports Notes. **9.30**, Concert from **Vienna. 11.0** (approx.), Close Down.

SUNDSVALL.—See **Stockholm.**

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—**6.30 to 7.0**, Programme arranged by the International Broadcasting Company of London. Concert of Light Music: Always in my Heart; Until to-morrow; Here lies Love; How are you?; How can you say no?; Bon voyage; If you would learn to live; Medley, Britelodia (Humphries). **7.0**, Opera Music. **7.15**, News, Horse Racing Results and Market Prices. **7.30**, Military Music. **7.45**, Light Music. **8.0**, Opera and Operetta Music. **8.30**, Waltzes. **9.0**, Sound Film Music. **9.15**, Balalaika Music and Russian Songs. **9.30**, Popular Songs and Orchestral Music. **10.0**, Concert for Listeners in Morocco. **10.15**, North African News. **10.30 to 11.30**, Programme in English by the I.B.C. **10.30**, Waltz Programme: Frühlingstimmen (Joh. Strauss); The Blue Danube (Joh. Strauss); Waltz Favourites (Ancliffe); Vienna, Vienna (Ancliffe); The Skaters (Waldteufel); Tell me with a Love Song; The Kiss Waltz; Selection from A Waltz Dream (O. Straus). **11.0**, Concert of Light Music; Black Eyes (Ferraris); Duet, To you it's only Ireland; Song, I want your Heart (Woods); Song, The Song of Songs (Moya); Organ Solo, Popular Irish Medley; Song, Bird Songs at Eventide (Coates); Song, Trees (Rasbach); Love's Dream after the Ball (Czibulka). **12 Midnight**, Weather and Announcements. **12.5 a.m.** (Monday), Concerto in G for Pianoforte (Mozart). **12.30** (approx.), Close Down.

TRIESTE

247.7 metres; 10 kW.—**8.40 a.m.**, See **Turin. 8.55**, Mass from the Cathedral of San Giusto. **10.0 to 10.20**, Agricultural Talk. **11.0** till Close Down, See **Turin.**

TRONDHEIM.—See **Oslo.**

TURIN

273.7 metres; 7 kW. Relayed by **Milan, 331.5 metres; Genoa, 312.8 metres;** and **Florence, 500.8 metres.**—**8.40 to 8.55 a.m.**, Giornale Radio. **9.40**, Agricultural Talk. **10.0**, Mass from the Church of the Annunziation, Florence. **11.0 to 11.15**, Bible Reading. **11.30 to 12.30 p.m.**, Orchestral Concert, conducted by Ugo Tansini. In the interval at **12.0 Noon**, Time and Announcements. **1.30 to 1.30**, Orchestral Concert. **2.30**, Orchestral Concert. Sports Notes in the interval. **3.0**, Light Music on Gramophone Records. Sports Notes in the interval. **4.0**, See **Rome. 5.0**, Giornale Radio, Football Report and other Sports Notes. **5.10**, Football Results. **6.0**, Dopolavoro Notes. **6.5 to 7.0**, Variety Concert on Gramophone Records. In the interval at **6.30**, Time and Announcements. **7.0**, Giornale Radio, Sports Notes and Light Music on Gramophone Records. **8.0**, Relay of an Opera. In the intervals, Talk and Theatre Notes, Giornale Radio after the Programme.

VIENNA

517 meters; 15 kW. Relayed by **Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 245.9 metres;** and **Salzburg, 218.5 metres.**—**10.30 a.m.**, Concert by the Vienna Symphony Orchestra, conducted by Anton Konrath; Soloist: Hedwig Rosenthal-Kanner (Pianoforte): Antiche danze ed arie (Respighi): Pianoforte Concerto in D Minor (Bach); Sixth Symphony in F, Op. 68 (the Pastoral) (Beethoven). **11.50**, Orchestral Concert, conducted by Alois Dostal. **1.0 to 2.0 p.m.**, Interval. **2.0**, Time and Programme Announcements. **2.5**, Book Review. **2.30**, Chamber Music: String Quartet in G Minor, Op. 26 (Kornauth); String Quartet in F Minor, Op. 95 (Beethoven). **3.30**, Talk: Europeans in China. **3.55**, Military Band Concert, relayed from **London. 4.55**, German Tenors on Gramophone Records. **5.30**, Talk: The First Crossing of the Alps by Ski-ers in 1908. **5.50**, Serge Bortkiewicz in a Pianoforte Recital of his own Music: Prelude in C Sharp Minor, Op. 33, No. 1; Preludes, Op. 40: (a) No. 1 in F Sharp, (b) No. 6 in F Sharp Minor, and (c) No. 7 in E; Elegy, Op. 46; Idylle orientale, Op. 9, No. 3a; Etudes, Op. 5: (a) No. 9 in F Sharp Minor, and (b) No. 10 in E Minor; In Three-four Time: Op. 28, Nos. 1, 2, 5, and 6. **6.20**, Konrad Paulis reads from his own Works, with Introductory Talk by Erwin Reiger. **6.50**, Time, Sports, Notes, and Programme Announcements. **7.0**, A Journey through Austria—the Tyrol, Vorarlberg, Salzburg, Upper Austria, Lower Austria, Vienna, Carinthia, Styria, and the Burgenland. **8.20**, Concert of Light Music. **9.0**, News. **9.20**, Concert (contd.). **11.0** (approx.), Close Down.

WARSAW

1,411 metres; 120 kW.—**11.15 a.m.**, Tchaikovsky Concert by the Warsaw Philharmonic Orchestra, conducted by C. Wilkomirski. Soloist: L. Berkwic (Pianoforte). Overture, The Voyevode; Pianoforte Concerto in B flat minor; Symphony No. 6—the Pathétique. In the interval, Talk by General Rydz-Smigly, relayed from the Town Hall. **1.0 p.m.**, Agricultural Talk. **1.20**, Concert by a Polish Band, conducted by Sielski. **1.40**, Agricultural Talk. **2.0**, Concert (contd.). **3.0**, Programme for Young People. **3.25**, Light Music on Gramophone Records. **3.45**, Talk on the Polish Language. **4.0**, Song and Violin Recital. In the interval, Announcements. **4.55**, Programme Announcements. **5.0**, Light Music from the Café Ziemianska. In the interval, Topical News. **6.0**, Miscellaneous Items. **6.55**, Dramatic Programme relayed from **Lwow (381 metres). 7.0**, Concert by the Lutnia Warsawska Mixed Choir, conducted by Maszynski and the Radio Orchestra, conducted by Oziminski: Overture, Rosamund (Schubert); German Dances for Choir (Schubert-Kreisler); Four Pieces (Joh. Strauss): (a) Persian March, (b) Selection from Eine Nacht in Venedig, (c) Perpetuum Mobile, (d) Overture, Der Karneval in Rom. Choir: Waltz, Roses from the South (Joh. Strauss). **8.20**, Pianoforte Recital by Carlo Zecchi: Concerto in G (Vivaldi); Partita in B flat (Bach); Sonata in E flat, Op. 31, No. 3 (Beethoven); Six Moments musicaux (Schubert); Two Etudes (Liszt). In the interval, Sports Notes. **9.20**, Dance Music. **9.55**, Aviation Weather Report and Police Notes. **10.0**, Dance Music from the Adria Café.

ZURICH.—See **Schweizerischer Landessender.**

MONDAY

FEBRUARY THE TWENTIETH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL	Sonata recital. Mr. Leonard Woolf: "Rousseau." B.B.C. chamber concert. A comic opera programme.
LONDON REGIONAL	Orchestral concert. Vaudeville programme. Speeches relayed from the British Industries Fair Banquet, at the Mansion House.
MIDLAND REGIONAL	Soloists in variety, a gramophone recital. Organ recital. Orchestral concert.
NORTH REGIONAL	Orchestral concert. Lt.-Col. Sydney Goldschmidt: "Seventeenth and Eighteenth Century Furniture in the North of England."
WEST REGIONAL	Orchestral concert from National Museum of Wales. Welsh interlude.
SCOTTISH REGIONAL	National and London Regional programmes. Orchestral concert.
BELFAST	The Music of Offenbach, orchestral programme. A relay from the Empire Theatre, Belfast.

ABROAD

BARI	Operetta music and songs.
BERO-MUNSTER	Werner Wehrli concert, by the Radio Orchestra, from Zurich.
COPENHAGEN	Harpsichord and oboe recital of Handel's music.
HAMBURG	Organ recital by Alfred Sittard.
STRASBOURG	Concert by the Cercle Artistique de l'Est, relayed from Nancy.

ATHLONE

413 metres; 60 kW.; and CORK, 224.4 metres, 1.30 to 2.0 p.m., Time Signal, Weather Report, Stock Report and Light Music on Gramophone Records. **6.0,** Popular Music on Gramophone Records. **6.15,** Programme for Children. **7.0,** Light Music on Gramophone Records. **7.20,** News Bulletin. **7.30,** Time Signal. **7.31,** Gaelic Talk. **7.45,** Poetry Reading. **8.0,** Light Music by the Station Orchestra. **8.20,** Variety Programme by the Non Brothers. **8.45,** The Station Orchestra. **9.0,** Contralto Solos by Joan Burke. **9.10,** The Station String Orchestra. **9.25,** Contralto Solos. **9.35,** A Fateful Interview—Sketch, by Elizabeth Young and Company. **10.5,** S. MacAonghusan and F. O'Higgins (Pipes and Fiddle). **10.30,** Time Signal, News, Weather Report and Close Down.

BARCELONA

RADIO-BARCELONA; Call EAJ1; 348.8 metres; 8 kW.—**6.0 p.m.,** Trio Concert. **7.0,** Request Gramophone Records. **7.20,** Sports Notes. **7.30,** Exchange Quotations and a Talk by Artur Balot. **8.0,** Popular Music on Gramophone Records, and News. **9.0,** Chimes from the Cathedral, and Weather Forecast. **9.5,** Humorous Review of the Week in Verse. **9.15,** Concert of Sardanas. **10.0,** Concert by the Station Orchestra: Entr'acte from La Habanera (Laparra); Romance from the Violin Concerto (Lalo); Overture, Figaro (Mozart). **10.30,** Catalan Radio Gazette. **11.0,** News Bulletin. **11.15,** Concert (contd.): Suite No. 1, Aphrodite (Février). **11.30,** Dance Music by the Melody Boys' Orchestra, relayed from the Excelsior Dance Hall. **11.0** (in an interval), News Bulletin. **12 Midnight** (approx.), Close Down.

BARI

269.8 metres; 20 kW.—**7.0 p.m.,** Agricultural Notes, Tourist Talk and Dopolavoro Notes. **7.20,** Giornale Radio and Weather Forecast. **7.30,** Time Signal and Announcements. **7.35,** Concert of Operetta Music and Songs; Dance Music from Die Meistersinger von Berlin (Lincke); Trotto Cavillino (Buonavolonta); Soprano Solo: Jungla (Di Lazzaro); Tenor Solo: Song (Strausky); Selection from La fiera dell'Improneta (Allegra); Tenor Solo: La rumba che cos'e? (Paolo); Soprano Solo: Io di amori ne ho tre (Mariotti); Tenor Solo: Chiacchiere (Gurgo Marf); Soprano Solo: Love is like that (Raymond); Brazilian Rondo (Escobar); Potpourri, Napoli canta (de Curtis); Tenor Solo: Per me, per te (Rizza); Soprano Solo: Milonguita (Valdes); Selection from Malbruk (Leoncavallo); Soprano Solo: John (Mascheroni); Tenor Solo: Für dich (Brodszky); Soprano Solo: Se prendiamo un buon caffè (Moletti); Selection from I monelli borentini (Ranzato). In the interval, News. **9.30,** Popular Music on Gramophone Records. **9.55,** News Bulletin.

BASLE.—See **Schweizerischer Landessender.**

BELGRADE

430.4 metres; 2.8 kW. **4.0 p.m.,** German Dialogue. **5.55,** Time and Programme Announcements. **6.0,** Popular Music on Gramophone Records. **6.50,** Talk on the following transmission. **7.0,** Relay of an Opera from the National Theatre. In the interval at **8.30,** News.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres, 60 kW.— **12.35 p.m.,** News Bulletin. **1.0,** Gramophone Concert from **Berlin (Witzleben).** **2.0,** Talk for Women: Arts and Crafts. **2.30,** Weather and Exchange. **2.45,** Review of Books. **3.0,** Talk: Modern Methods in the Education of Girls. **3.30,** Concert from **Berlin (Witzleben).** **4.10,** Reading (Anni Quensel). **4.30,** Old Chamber Music: Fantasias for Violin, Viola and 'Cello (Purcell); Trio for two Violins and 'Cello, Op. 54 No. 2 (Boccherini). **5.0,** Talk: German Work in East Africa. **5.30,** Making Music with Invisible Partners. **5.55,** Weather and Announcements. **6.0,** English Lesson. **6.30,** A Poem. **6.35,** Light Music from **Breslau.** **7.0,** See **Leipzig.** **7.45,** Topical Talk. **8.0,** Programme to be announced. **9.0,** Weather, News and Sports Notes. **9.45,** Weather Report for Shipping. **10.0,** Dance Music from **Berlin (Witzleben).** **11.0** (approx.), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—**3.30 p.m.,** Concert of Light Music by Alois Pachernegg and his Orchestra: Overture, Banditenstreiche (Suppé); Ein Walzer aus Wien (German); Suite, Deutsches Baroque (Pachernegg); Nocturne and Waltz from La Burla (Weingartner); Waltz Intermezzo (Lehár); Fahrend Volk (Leuschner); Eysler Potpourri (Hruby). **4.30,** Talk: Which Careers offer the best prospects for Women? **4.50,** Talk for Young People. **5.20,** Concert from the Golfhotel at the Zoo. **5.55,** The Witzleben Station informs its Listeners . . ." **6.0,** Talk on the Twentieth Anniversary of the Death of Robert von Liebens. **6.10,** A Speech by Otto Flake: Tolerance. **6.30,** German Dances (Mozart), on Gramophone Records. **6.50,** Dialogue on Otto Flake's Speech: Is Flake right? **7.10,** Talk on Music. **7.20,** The Barber of Bagdad—Comic Opera in Two Acts (Cornelius). **8.15** (in an interval), News and Sports Notes. After the Opera: Weather, News, Sports Notes, and Dance Music from the Eden Pavilion. **11.0** (Also for **Zeesen, 31.38 metres**), The Adventures of Two Rivers—The Origin, Landscape, and History of the Emscher and the Hamme.

BERNE.—See **Schweizerischer Landessender.**

BEROMUNSTER. — See **Schweizerischer Landessender.**

BODEN.—See **Stockholm.**

BODO.—See **Oslo.**

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—**7.30 p.m.,** News, Exchange, and Market Prices. **7.40,** Talk: Bordeaux a Century Ago. **7.55,** Lottery Results. **8.0,** Talk on Hygiene. **8.15,** Charades. **8.20,** News Bulletin, Exchange, and Weather Forecast. **8.30,** Concert of Classical and Modern Music.

BRATISLAVA

279 metres; 11 kW.—**3.10 p.m.,** Concert by the Station Orchestra, conducted by F. Dyk. Soloist: R. Macudzinski (Pianoforte): Overture (Litolff); Symphony for String Quintet, Wind Quintet, and Pianoforte (Wolf-Ferrari). **4.10,** See **Prague.** **4.50,** Light Music on Gramophone Records. **5.0,** Talk on Smyrna. **5.15,** Concert by the Station Trio. **6.0,** See **Prague.** **6.10,** Technical Talk. **6.25,** See **Brno.** **7.40,** Esperanto Programme. **8.10,** See **Prague.** **10.0** (approx.), Close Down.

BREMEN.—See **Hamburg.**

BRESLAU

325 metres, 60 kW.; and **GLEIWITZ, 253 metres.—12.10 p.m.,** Gramophone Concert. **12.45,** Time, Weather, News, Exchange and Shipping Report. **1.5,** Gramophone Concert: Overture, Morning, Noon and Night (Suppé); Song from Le postilion de Longjumeau (Adam); Falstaff's Song from The Merry Wives of Windsor (Nicolai); Overture, Gipsy Love (Lehar); Waltz, Dorfschwalben aus Oesterreich (Jos Strauss); Two Songs from Der liebe Augustin (Fall); Overture, Orpheus in the Underworld (Offenbach). **1.45,** Sponsored Programme with Gramophone Records. **2.10,** Agricultural Prices. **2.40,** Book Review. **3.0,** Talk: Industries of Asia. **3.20,** Concert by the Station Orchestra. Conductor, Franz Marszalek. Soloist: Hans W. Bachmann (Baritone). Overture, Rosamund (Schubert); Song, Der Wanderer (Schumann); Songs (Brahms): (a) Mainacht, (b) Feldeinsamkeit, (c) Sonntag; Selection from Czar and Carpenter (Lortzing); Songs: (a) Ich wollt' ich wär' ein König (Breu), (b) Der Wagen rollt! (Fürst), (c) Sechse, sieben oder acht (Brüll); Ballet Music from Ritter Pasman (Joh. Strauss). **4.30,** Agricultural Prices, followed by a Technical Review. **4.55,** Educational Report. **5.15,** English Lesson. **5.40,** Programme to be announced. **6.0,** Talk: The Possibilities of Work for Silesian Artists. **6.30,** Weather for Farmers. **6.35,** Concert by the Station Orchestra, conducted by Franz Marszalek; Waltz from Frühlingsluft (Joh. Strauss-Reiterer); Onetep, España (Schicke); Tango from Tempo 8000 (Pataky); Potpourri of New Popular Songs (Golwyn). **7.0,** All about Gramophone Records—Literary Men relate their Experiences. **8.0,** The Castle at Breslau—a History in the form of Legends, Documents and Radio Reports. **9.0,** Time, Weather, News, Sports Notes, Colonial Market Report and Programme Announcements. **9.25,** Answers to Technical Wireless Questions. **9.35,** Talk: In the Land of the Olympic Games. **9.50,** Talk: Winter Days in the Northern Districts of the Black Forest. **10.5** (approx.), Close Down.

BRNO

342 metres; 35 kW.—**3.10 p.m.,** See **Bratislava.** **4.10,** Programme for Children. **4.20,** Review of Russian Literature. **4.40,** Programme for Women. **5.0,** The Week's Review of Gymnastics and Sport. **5.15,** See **Prague.** **5.25,** German Transmission: News, Elementary French Lesson, and Light Music on Gramophone Records. **6.0,** See **Prague.** **6.25,** Concert by the Station Orchestra, conducted by B. Bakala: Overture (Blasius); Waltz (Lincke); Czech Suite (Moor); March (Fucik); Selection from Eine Ball nacht (O. Straus). **7.25,** Talk. **7.40,** Concert by a Balalaika Orchestra and Choir. **8.10,** See **Prague.** **10.0** (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R.; 509 metres 15 kW.—**12 Noon,** Gramophone Concert of Light Music. **1.0 p.m.,** Le Journal Parlé. **1.10,** Concert of Cigány Music by the Small Station Orchestra, conducted by P. Leemans. **2.0,** Educational Programme. **5.0,** Concert by the Symphony Orchestra, conducted by A. Meulemans: Overture, Rienzi (Wagner); Petite Suite (Debussy); Waltz from Der Rosenkavalier (R. Strauss); Au pays du Lin (J. Van der Meulen); Travel Impressions (Albeniz); Slav Dance (Chabrier). **6.0,** Talk: The Walloon Writer, Louis Leleu. **6.15,** Song Recital by M. Harris: Caro mio ben (Giordano); Amarilli (Caccini); Stornellatrice (Respighi); The Unforesees (C. Scott); Thy Beaming Eyes (MacDowell); Pilgrim Song (Tchaikovsky). **6.30,** Extracts from Show Boat (Kern) with Commentary, on Gramophone Records. **7.15,** Educational Talk. **7.30,** Theatre and Cinema Reviews. **8.0,** Violin Recital by Remy Principe: Sonata in E (Pugnani); Dreaming (Guarnieri); Three Airs on Italian Folk Songs (Principe): (a) In the Woods of the Reno, (b) Campielo, (c) Popular Sicilian Songs. **8.30,** Vedi n'est pas un conte—Play (Lud. Stiénon Du Pré) relayed from the Grand Hotel, Verviers. **9.20,** Reading of Carnival Literature from the Works of Th. Gautier, E. Verhaeren, Roger Milès, Isi Colin and Francis Carco. **9.35,** Concert conducted by André Felleman, relayed from the Grand Hotel, Antwerp: Potpourri (Morena); Foxtrot, Lullaby of the Leaves (Young); Foxtrot, Hallo Romania! (Michaelov). **10.0,** Le Journal Parlé. **10.10,** Concert (contd.): Potpourri of Dance and Sound Film Music (Golwyn); Polish Dance for Pianoforte (Scharwenka); Selection from The Prince of Arcady (Stolz); Slow Foxtrot, Tell me To-night (Spoliansky); Love me to-night (Whiting); March, Stars and Stripes (Sousa). **11.0** (approx.), Close Down.

BRUSSELS (No. 2)

N.I.R.; 338.2 metres; 15 kW. Programme in Flemish.—**12 Noon,** Concert of Flower and Bird Music by the Station Orchestra, conducted by Pierre Leemans. **1.0 p.m.,** Le Journal Parlé. **1.10,** Gramophone Records. **2.0,** Educational Programme. **5.0,** Concert by the Radio Orchestra, conducted by Franz André; Overture, La petite mariée (Lecocq); Selection from Hans, the Flute Player (Gaune); Ballet Music from Véronique (Messager); Waltz (Waldteufel). **5.45,** Programme for Children. **6.30,** Concert of Romantic Music by the Station Orchestra, conducted by P. Leemans: Overture, Ruy Blas (Mendelssohn); Hungarian Divertissement (Schubert); Pianoforte Solo, Papillons (Schumann); Nocturne for Violin (Chopin-Sarasate); Album for the Young (Schumann); Piece (Mendelssohn). **7.15,** Talk on Folklore. **7.20,** Talk by Mme. Verholen. **7.30,** Le Journal Parlé. **8.0,** Musical and Literary Programme on Gramophone Records. **8.45,** Talk. **9.0,** Concert by the Symphony Orchestra, conducted by Arthur Meulemans. Soloist: Yvonne Van Looy (Songs). Scheherazade (Rimsky-Korsakov); Two Songs; Orchestral Suite, Fleurs de mon jardin (Alpaerts); Minuet and Dance (Opsomer); Three Songs; Norwegian Rhapsody (Lalo). **10.0,** Le Journal Parlé. **10.10,** Light Music on Gramophone Records. **11.0** (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—**4.0 p.m.,** Concert of Romanian Music by the Luca Orchestra. **5.0,** News and Time Signal. **5.10,** Talk. **5.25,** Concert by the Luca Orchestra (contd). **6.0,** Talk on Romania: Her Geological Composition. **6.40,** Popular Music on Gramophone Records. **7.0,** Time Signal. **7.1,** Quartet, Op. 60 (Brahms). **7.30,** Talk. **7.45,** Song Recital by Mme. Nina Aurelina: Barcarolle (Fauré); Puisque l'aube grandit (Fauré); Mädchenlied (Brahms); Spanish Song (Brahms); Two Romanian Airs. **8.5,** Trio for Violin, Horn and Pianoforte (Mozart). **8.35,** Dance Music, relayed from the Grand Hotel. **9.0,** News Bulletin.

BUDAPEST

550 metres; 18.5 kW.—Programme also relayed on **840 metres from 6.0 to 11.0 p.m.** —**4.30 p.m.,** Gramophone Concert: Two Spanish Dances (Moszkovsky); Melody from Carmen (Bizet); Bravura Variations (Mozart-Adam); Selection from Rosamund (Schubert-Kreisler); Aria from La Juive (Halévy); Melody from Faust (Gounod); Prelude on Bach Theme (Liszt); Melody from Faust (Gounod); Melody from Aida (Verdi); The Old Song (Love); Kleiner Haushalt (Loewe); Vesper Song. **5.30,** German Lesson. **6.0,** Song Recital. **6.45,** EHak—Play (Koloman Harsanyi). **9.0,** News. **9.15** (approx.), Musical Parodies by the Opera House Orchestra, conducted by Rudolf Kleinecke. **10.30,** Concert of Cigány Music, from the Kovacsevics Restaurant.

CASSEL.—See **Frankfurt.**

COPENHAGEN

281 metres; 0.75 kW.; and **KALUNDBORG, 1,153 metres;** 7.5 kW.—**11.0 a.m.,** Time and Chimes from the Town Hall. **11.5,** String Ensemble Concert, conducted by Max Skalka, relayed from the Hotel d'Angleterre. **1.0 to 2.20,** Interval. **2.20,** Talk for the Housewife. **2.30,** Concert by Carl Rydahls Instrumental Ensemble. **4.40,** Exchange and Fish Market Prices. **4.50,** Talk in French: The Modern French Film. **5.20,** English Lesson. **5.50,** Weather Forecast. **6.0,** News. **6.15,** Time Signal. **6.30,** Talk on Rameses II. **7.0,** Chimes from the Town Hall. **7.5,** Relay of a Choral Concert. Talks in the intervals. **8.15,** Saxophone and Pianoforte Recital by G. E. Tornqvist and Viktor Fischer: Saxophone Solo: I de lyse Naetter (Schrader); Pianoforte Solo: Pianophum (Alter): Saxophone Solos: (a) Quand l'amour meurt (Crémieux), (b) An der Weser (Pressel); Pianoforte Solo: Hungaria (Doncel); Saxophone Solo: Ständchen (R. Strauss). **8.35,** Reading. **9.5,** News. **9.20,** Händel Music—Harpsichord and Oboe Recital by Folmer Jensen and Henry Muncк: Suite No. 7 in G Minor for Harpsichord; Chamber Sonata in C Minor for Oboe and Harpsichord. **9.50,** Dance Music from the National Scala. In the interval at **11.0,** Time and Chimes from the Town Hall. **11.30** (approx.), Close Down.

CORK.—See **Athlone.**

DANZIG.—See **Heilsberg.**

DRESDEN.—See **Leipzig.**

DUBLIN.—See **Athlone.**

FEB. 20th **MONDAY** *continued*

FECAMP

223 metres; 10 kW.—**12.0 Noon**, Light Music on Gramophone Records. **12.30**, News Bulletin. **12.45**, Variety Concert. **6.0 to 7.0**, Programme in English by the I.B.C., C. Danvers Walker, R. Chene, and B. McNab announcing. **6.0**, Pianoforte Recital for Hastings Listeners: Selection from Rigoletto (Verdi); Rustle of Spring (Sinding); Alice where art thou? (Asher); The First Waltz (Durand); Wasps (Holbrooke); Liebesträume (Liszt); Romanian (Holbrooke); Prelude in C Sharp Minor (Rachmaninov). **6.30**, Concert for Eastbourne Listeners: Suite, Americana (Thurban); Kisses in the Dark (de Micheli); Gipsy Moon (Borganov-Eyton); Ke-sa-ko; In the Sudan (Sebek); Lazy Pete (Kernsten); Spanish Gipsy Dance. **7.0**, Local News. **7.15**, Popular Music on Gramophone Records. **7.30**, Radio Gazette. **8.0**, The Listeners' Half-Hour and News. **8.30**, Dramatic Programme. **10.0** till Close Down, Programme in English by the I.B.C. **10.0**, Dance Music. **11.0**, Military Band Concert Distant Greeting (Loring); Light of Foot (Lotann); The Thrush (Cole); Xylophone Solo: National Emblem (Bagley); The Thunderer (Sousa); El Abanico (Javaloyes); A Frangesa (Costa); Here, there and everywhere (Bosc). **11.30**, Songs: Will the Angels play their Harps for me?; Forget me not; Old Pal; Lay my Head beneath a Rose; Little Boy Blue; I pitch my Lonely Caravan; That dear old Song; Somebody, Somewhere, Someday. **12.0 Midnight**, Variety Music: Pianoforte Solo: Hot Scotch; On a Cold and Frosty Morning; I wanna be loved by you; The Zoo Keeper; All in favour; I don't know; Pianoforte Solo: Puttin' on the Ritz. **12.30 a.m. (Tuesday)**, Popular Songs: Handsome Gigolo; Let me sing and I'm happy; Rollin' down the River; When your Lover has gone; Violet Eyes and Cherry Lips; To my Mammy; Dancing with Tears in my Eyes; Little Sweetheart of the Prairie. **1.0**, Organ Recital: Leslie Stuart Potpourri; Too late; Lily of Laguna; Maree; Live, love and laugh; An Evening in Caroline; By the Fireside; Good-night Vienna. **1.30**, Popular Songs: Airman, Airman; I still believe in you (Akst); Singin' in the Bathtub (Magidson); I've never seen a Smile like yours (Johnson); I took Jane for a Walk in the Rain (Hargreaves); Put your Worries through the Mangle (Raymond); We must all pull together (Weston); You're gonna be young (Nicholls). **2.0**, Dance Music. **2.57**, I.B.C. Goodnight Melody. **3.0** (approx.), Close Down.

FLENSBURG.—See **Hamburg.**

FLORENCE.—See **Turin.**

FRANKFURT

259 metres, 17 kW.; and **CASSEL**, **245.9 metres.**—**5.50 p.m.**, English Language Lesson. **6.15**, Time, Programme Announcements, Weather, and Exchange Rates. **6.25**, Till Eulenspiegel's Merry Pranks (on Gramophone Records). **6.45**, Greetings to Trier (R. G. Binding). **7.0**, Germany's Oldest Town—a Radio Picture Sheet of Trier in Olden Days (Limbourg). **8.0**, See **Stuttgart.** **9.0**, Time, News, Weather, and Sports Notes. **9.45**, Chamber Music: String Quartet in D (Mozart); String Quartet in C Minor, Op. 51, No. 1 (Brahms). **11.0**, See **Stuttgart.** **11.30** (approx.), Close Down.

FREDRIKSSTAD.—See **Oslo.**

FREIBURG.—See **Stuttgart.**

GENEVA.—See **Radio-Suisse Romande.**

GENOA.—See **Turin.**

GLEIWITZ.—See **Breslau.**

GOTEBORG.—See **Stockholm.**

GRAZ.—See **Vienna.**

HAMAR.—See **Oslo.**

HAMBURG

Call ha (in Morse), **372 metres**; 1.5 kW. Relayed by **Bremen, 264.8 metres**; **Flensburg, 227.4 metres**; **Hanover, 566 metres**; and **Kiel, 232.2 metres.**—**6.5 p.m.**, Talk: Did you know that?—Strange Facts about Animals. **6.25**, Weather Report. **6.30**, Walter von Molo reads from his own Works. **7.0**, Revolt of Ideals—a Dream—A Musical Play for Radio (Ernst Johannsen). Music by Walter Girnatis. **7.50** (from **Bremen**), Russian Concert: Sinaida Lissitschkina (Songs), Stanislav Frydberg (Violin) and Reinhold Krug (Pianoforte). Violin Solo: Vocalise (Rachmaninov-Pres); Aria from Russian and Ludmilla (Glinka); Violin Solo: Volga Song (Frydberg); Aria from The Czar's Bride (Rimsky-Korsakov); Violin Solo: (a) The Captive (Gretchaninov), (b) Romance from The Queen of Spades (Tchaikovsky); Songs: (a) Hindou Song (Rimsky-Korsakov), (b) Arioso from The Snow Maiden (Rimsky-Korsakov); Violin Solos: (a) Despair (Frydberg), (b) Russian National Anthem (Prince Lowow-Frydberg). **9.0**, Time and News Bulletin. **9.20**, Organ Recital by Alfred Sittard: Choral Partita on Nun lasst uns Gott dem Hernn Dank sagen und ihn chren (Vincent Lübeck); Fantasia and Fugue in G Minor (Bach); Three Organ Pieces (Reger): (a) Organ Choral, Wie schon leuchtet der Morgenstern, Op. 67, (b) Melodia, Op. 129, (c) Toccata in D Minor, Op. 59. **9.50**, Ice Report. **9.55**, Topical Talk. **10.5**, Concert from the Café Wallhof.

HANOVER.—See **Hamburg.**

HEILSBERG

276.5 metres; 60 kW., and **DANZIG**, **453.2 metres.**—**12.5 p.m.**, Popular Music on Gramophone Records. In the Interval at **12.20**, News. **1.30 to 2.0**, Interval. **2.0**, Agricultural Prices and Exchange Rates. **2.45**, Concert by the Königsberg Male Voice Choral Society for the Blind. **3.15**, Talk: On Skis across the Mountains of Silesia. **3.30**, Concert from **Breslau.** **4.30**, Talk: New Traffic Regulations. **4.55**, Book Review. **5.15**, Agricultural Prices. **5.20**, Ice Report. **5.30** (from **Danzig**), The Danzig Programme—Wolfgang Federau reads from his own Works. **6.0**, Talk: Memorable Days of the Week. **6.10**, Josef Poerner sings Old Barrel Organ Songs. **6.30**, English Lesson for Beginners. **6.55**, Weather and News. **7.0**, See **Breslau.** **8.0**, Gubernator Coeli—a Radio Sequence for the 460th Anniversary of the Birth of Copernicus, the Founder of Modern Astronomy (Martin Borrmann), with Introductory Talk. **9.0**, Weather, News and Sports Notes. **9.15**, Double Quartet in G Minor, Op 136 (Spohr).

HILVERSUM

Announced **HUIZEN**, **296.1 metres**; 20 kW. (7 kW. up to **4.40 p.m.**—Programme of the Christian Radio Society (C.N.C.R.V.). **11.55 a.m.**, Light Music on Gramophone Records. **12.10 p.m.**, Organ Recital by Wm. Mudde. **1.40**, Programme for Schools. **2.15**, Gardening Talk. **2.55**, Dressmaking Lesson. **3.10**, Lesson. **3.25**, Interval. **3.40**, Bible Reading and Sacred Music. **4.40**, Choral and Orchestral Concert on Gramophone Records. **5.10** (approx.), Popular Music on the N.C.R.V. Organ. **6.10**, Answers to Correspondents. **6.55**, Time Signal. **7.10**, Police Notes. **7.25**, Religious Notes. **7.40**, Orchestral and Choral Concert. Three Choral Pieces: Selection from Cantata No. 75, Die Elenden sollen essen (Bach); Three Choral Pieces: Concerto grosso (Händel); Selection from Lilac Time (Schubert-Berté); Toréador et Andalouse (Rubinstein); Suite from The Bartered Bride (Smetana). In the interals at **8.10** and **8.55**, Religious Talk. **10.0**, News Bulletin. **10.10** Concert (contd.): Concerto in G for Violin and Orchestra (Haydn); Selection from Les petits riens (Mozart). **10.40**, Gramophone Concert: Water Music Suite (Händel), played by Dr. Bullock on the Westminster Abbey Organ; Lullaby of the Shepherds, from The Messiah (Händel), sung by Richard Tauber, with Organ Accompaniment; Two Pieces from The Messiah: (a) I Know that my Redeemer liveth, (b) Come unto him, sung by Rachel Morton (Soprano), with Orchestral Accompaniment; Hymn (Vulpius); Vocal Quartet: (a) Dank nu den Heer voor al Zijn zegeningen, (b) Geloofd zij God met diepst ontzag; Baritone Solo with Organ and Trumpet; Psalm 98. **11.10** (approx.), Close Down.

HORBY.—See **Stockholm.**

HUIZEN

Announced **HILVERSUM**; **1,875 metres**; 8.5 kW.—Programme of the Workers' Radio Society (V.A.R.A.). **11.40 a.m.**, Concert by the Small V.A.R.A. Orchestra, conducted by M. Duchant. **1.40 to 2.10 p.m.**, Interval. **2.10**, Light Music on Gramophone Records. **2.40**, Talk. **3.10**, Popular Music on Gramophone Records. **4.20**, Talk. **4.50**, Variety Concert: Overture, Orpheus in the Underworld (Offenbach); Berceuse (Spendiarow); The Rosary (Nevin); Nola (Arndt); Spanish Dance (Ficlitz); Cuban Serenade (Aletter); Obertas (Wieniavski); Melody (Bizet); Danse créole (Chaminade); Ah, Sweet Mystery of Life (Herbert); Entrée à Mars (Dicker); Bonita (Mezzacapo); Esquisses (Petre); Andante (Nardini); La Cathédrale engloutie (Debussy); Traüme (Wagner); Bonclette (Thone); Jetzt bin ich noch im siebenten Himmel (Beece); Polish Song (Wieniavski); Selection from Rosamunde (Schubert); Waltz (Tchaikovsky); Serenade (Albéniz); Gavotte (Martini); Melody (Ailbout); Czardas (Monti); Presto (Aubert); April and August (Tchaikovsky); Humoresque (Rachmaninov); Adagio (Beethoven); Minuet (Beethoven). **6.40**, Talk on Music, with Illustrations by the Loe Cohen Trio. **7.55**, Orpheus and Eurydice—Opera (Gluck), by a Mixed Choir, the V.A.R.A. Orchestra, and Soloists. Conductor, S. Englander. **9.20** (in the interval), Talk. **10.10**, News. **10.20**, Organ Recital by M. Jong: Salut d'amour (Elgar); Pizzicato (Delibes); Potpourri (Jong). **10.40**, Light Music on Gramophone Records. **11.40** (approx.), Close Down.

INNSBRUCK.—See **Vienna.**

KALUNDBORG.—See **Copenhagen.**

KATOWICE

408 metres; 16 kW.—**5.50 p.m.**, Talk: Photography for Amateurs. **6.5**, Announcements and Popular Music on Gramophone Records. **6.25**, Announcements. **6.30 to 9.0**, See **Warsaw.** **9.0**, Answers to Technical Correspondents. **9.20**, Dance Music from **Warsaw.**

KAUNAS

1,935 metres; 7 kW.—**5.30 p.m.**, Variety Programme. **6.0**, Time, Weather and News. **6.30**, Variety Programme. **6.50**, Talk: The Importance of Personality in Society. **7.10**, Concert of Chamber Music. **7.40**, Talk on the National Debt. **8.0**, Variety Programme. **8.20**, Sports Notes. **8.30**, Concert. **9.0** (approx.), Close Down.

KIEL.—See **Hamburg.**

KLAGENFURT.—See **Vienna.**

KOSICE.—See **Prague.**

LANGENBERG

473 metres; 60 kW.—**12 Noon**, Orchestral Concert, conducted by Wolf. **1.30**, Cattle Market Prices. **2.30**, Economic Notes and Time. **2.50**, Programme for Children. **3.20**, Programme for Young People. **4.0**, Concert by the Dortmund Municipal String Quartet and Rita Weise (Soprano); String Quartet, Op. 64, No. 5 (Haydn); Songs: (a) Ah ritorna (Gluck), (b) Erster Verlust (Zelter), (c) Sehnsucht (Zelter); String Quartet, Op. 96 (Dvorák); Songs (Wolf): (a) Blumengruss, (b) Gleich und gleich, (c) Frühling übers Jahr. **5.20**, Talk: Woman's Place in German Literature. **5.45**, Time, Weather, Economic Notes, and Sports Report. **6.0**, Talk: Westphalian Peasants in the Baltic Provinces. **6.20**, Reading of Unpublished Poetry (Bernhard Rang). **6.30**, Talk: West German and Austrian Industry. **6.55**, News. **7.0**, See **Breslau.** **8.0**, Was tut Othegraven für Ina—Radio Play (Peter Dick). **8.40**, Concert by the Small Station Orchestra, conducted by Eysoldt. **9.5**, News and Sports Notes. **11.0** (approx.), Close Down.

LAUSANNE.—See **Radio-Suisse Romande.**

LEIPZIG

389.6 metres; 120 kW.; and **DRESDEN**, **319 metres.**—**11.5 a.m.**, Concert by the Seifert Orchestra, Halle. In an interval at **12 Noon**, News, Weather, and Time. After the Programme, Exchange Quotations. **1.0 p.m.**, Art and Film Review. **1.30**, Advice for the Unemployed. **1.45**, The Journey to Memel—Sketch (M. M. Gehrke). **2.10**, Dialogue on Poultry-keeping. **2.35**, Exchange and Market Prices. **3.0**, Gramophone Concert: Krolls Ballklänge (Lumbye); Brune ou blonde (Waldteufel); Von Wien durch die Welt (Hruby); Ich bin nur ein armer Wandergesell (Künneke); Der Wagen rollt (Fürst); Overture, Romeo and Juliet (Tchaikovsky); Serenade (Titl); Guitarre (Moszkovsky); The Gingerbread House (Ivory); Trinkspruch (Schmalstich); Cavatina (Raff); Mei Vogtland is doch wunerschc; Silver Threads among the Gold (Danks); The Rosary (Nevin); Der seltene Beter (Loewe); Valse d'amour (Max Reger); Selection from Le bourgeois Gentilhomme (Richard Strauss); Valse caprice (Werkmeiter); Prelude in D Minor (Werkmeiter); Two Songs: (a) Das Geheimnis, (b) Auf der Lüneberger Heide; Waltz from Zigeunerprimas (Kálmán); Overture, Light Cavalry (Suppé). **4.30**, Weather and Time. **4.50**, Exchange Quotations. **5.0**, Talk: School Knowledge and Practical Life. **5.30**, A Thousand Years of German Literature—the Carnival Plays. **5.50**, Programme to be announced. **6.0**, Recital of Folk Music on the Mouth-Organ and Accordion, with Commentary, by August Roth. **6.45**, Reading of Modern German Lyrics. **7.0**, Concert by the Leipzig Symphony Orchestra, conducted by Carl Schuricht: Concerto in B Minor for Four Violins, String Orchestra, and Harpsichord (Vivaldi); La Mer, Three Symphonie Sketches for Orchestra (Debussy); Concerto, Op. 75, for Violin and Orchestra (Herrmann); Suite from The Fire Bird (Stravinsky). **9.5**, News Bulletin. **9.15** (approx.), Concert of Light Music by the Dresden Soloist Ensemble: Overture, Die vier Menschenalter (Laelner); Selection from the Noveletten, Op. 29, for Pianoforte, Violin, and 'Cello (Gade); Nachmittagsstile (Jensen); Guitarre (Lalo); Violin Solos: (a) Canzonetta (Theodor Bluiner), (b) Caprice viennois (Kreisler); The Musical Box (Liadov); The Vestal (Drigo); Waltz in Old Style (Burmester); Schlummerlied (Schumann); Nocturne (Liszt); Pierrot and Pierrette (Lehár); Fantasia, Die wunderlichen Geschichten des Kapellmeisters Kreisler (Reznicek); Selection from The Bayadere (Kálmán). **11.0** (approx.), Close Down.

LINZ.—See **Vienna.**

LJUBLJANA

574.7 metres; 2.5 kW.—**4.30 p.m.**, Quintet Concert. **5.30**, Esperanto Lesson. **6.0**, Lesson in Serbo-Croatian. **6.30**, Talk on Hygiene. **7.0**, Programme from **Belgrade.** **9.0**, Time, News and Variety Music on Gramophone Records.

LWOW

381 metres; 16 kW.—**6.15 p.m.**, Miscellaneous Items. **6.30**, See **Warsaw.** **10.0**, Relay of Foreign Stations. **10.30** (approx.), Close Down.

LYONS

LA DOUA; **465.8 metres**; 1.5 kW.—**6.30 p.m.**, See **Strasbourg.** **7.30**, Radio Gazette. **8.2[illegible]**, Reading for Children. **8.30**, Concert by the Radio Trio. Soloist: Alexander Braminov (Baritone). News after the Concert.

MADRID

ARANJUEZ (EAQ), **30.43 metres**; 20 kW.—**10.30 p.m.**, Popular Concert. **10.45**, Radio Chronicle. **11.0**, Popular Concert (contd.). **11.35**, Sports Report and Bull-fighting Notes. **11.40**, Light Music. **12 Midnight** (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 424.3 metres; 2 kW.—**7.0 p.m.**, Chimes, Exchange, and Request Gramophone Records. **8.15**, News Bulletin. **8.30** (approx.), Close Down.

MALMO.—See **Stockholm.**

MILAN.—See **Turin.**

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—**3.10 p.m.**, See **Bratislava.** **4.10**, See **Prague.** **4.50**, Talk. **5.[illegible]**, Literary Review. **5.15**, Talk for Workers. **5.25**, See **Prague.** **5.30**, German Transmission: Two Talks. **6.0**, See **Prague.** **6.2[illegible]**, See **Brno.** **8.30**, Concert by a Country Band relayed from **Radvanice.** **9.0**, See **Prague.** **10.0** (approx.), Close Down.

MOSCOW

TRADES UNION, **1,304 metres**; 100 kW.—**4.0 p.m.**, News. **4.10**, Announcements. **4.3[illegible]**, Mozart, Beethoven, and Schubert Concert. **5.0**, Political Discussion. **8.0**, Talk in English: The Doctrines of Marx and Lenin. **8.5[illegible]**, Time Signal. **9.5**, Press Review.

MOTALA.—See **Stockholm.**

MUHLACKER.—See **Stuttgart.**

MUNICH

533 metres; 60 kW. Relayed by **Augsburg** and **Kaiserslautern, 560 metres**; and **Nürnberg, 239 metres.**—**3.0 p.m.**, Song and Pianoforte Recital: Ina Delvid (Soprano), Margarete Simonsen-Patek (Mezzo-Soprano), and Margarete Arnold-Lawaceek (Pianoforte). **3.40**, An Interview with the Leader of the German Himalaya Expedition. **4.0**, Orchestral Concert, conducted by Ernst Hagel: Carnival Overture (Leuschner); Selection from Eva (Lehár); Waltz Potpourri, Schlagsahne (Kermbach); Waltz, Way Down South (Myddleton); Slow Foxtrot (Nicholls); Melody (Nicholls); March (Wagner). **5.1[illegible]**, Talk: Two Pioneers of Public Hygiene—Frank and Mai. **5.35**, Talk for Workers. **5.55**, Introduction to the following Transmission. **6.5**, Figaro—Opera in Four Acts (Mozart), relayed from the Residenztheatre. In the interval at **7.35**, Time, Weather and Agricultural Notes. **9.20**, Time, Weather, News and Sports Notes. **9.45**, Serenade by the Small Station Orchestra, conducted by Erich Kloss: Soloists, Ridi Grün and Walter Helbning (Songs). **11.0** (approx.), Close Down.

NAPLES.—See **Rome.**

NOTODDEN.—See **Oslo.**

OSLO

1,083 metres; 60 kW. Relayed by **Fredrikstad, 365.8 metres**; **Hamar, 574.7 metres**; **Notodden, 447.1 metres**; **Porsgrund, 453.[illegible] metres**; and **Rjukan, 447.1 metres.**—**3.45 p.m.**, Light Music by the Radio Ensemble. **4.45**, Parliamentary Report. **5.0** German Lesson. **5.30**, Agricultural Talk. **6.0**, Announcements, Weather, and News. **6.30**, Popular Airs and Dance Music by the Oscar Halvorsen Trio. **7.0**, Time. **7.1**, Political Review. **7.30**, Concert of Chamber Music, relayed from the University Concert Hall. **8.40**, Weather and News. **9.0**, Topical Talk. **9.15**, Recitations.

OSTERSUND.—See **Stockholm.**

PALERMO

542 metres; 3 kW.—**7.0 p.m.**, Dopolavoro Notes, Tourist Talk, Agricultural Notes, Report of the Royal Geographical Society, and Giornale Radio. **7.20**, Light Music on Gramophone Records. **7.30** (in an interval) Time Signal and Announcements. **7.45**, Concert of Chamber Music. V. Mannino (Pianoforte), G. Gugliana ('Cello), and Hella Heltai Di Gregorio (Soprano). Pianoforte Solos: (a) Intermezzo (Brahms), (b) Danza bassa dello sparviero (Pizzetti); 'Cello Solos: (a) Valse triste (Sibelius), (b) Malaguena (Albeniz); Soprano Solos: Two Songs (Schumann); Sonata in A Minor for Pianoforte and 'Cello (Grieg); Soprano Solos: Two Songs from The Queen of Sheba (Goldmark); Two Etudes and a Polonaise in C Sharp Minor (Chopin). After the Concert, Light Music on Gramophone Records. **9.55**, News Bulletin.

PARIS

EIFFEL TOWER, Call FLE, **1,445.7 metres**; 13 kW.—Time Signals (on **2,650 metres**) at **9.26 a.m.** and **10.26 p.m.** (Preliminary and 6-dot Signals).—**5.45 p.m.**, Le Journal Parlé. **7.20**, Weather Report. **7.30**, Concert, arranged by the Music Composers' Society: String Quartet (Dequin); Songs (Roget), with the Composer at the Pianoforte: (a) Ariette, (b) Madrigal, (c) Epiphanie, (d) Le Bonheur; Theme with Variations for Pianoforte (Staelenberg), played by the Composer; An-

dante and Scherzo for 'Cello and Pianoforte (Bouinois), the Composer at the Pianoforte; Joueurs de flûte (Rousscl); Songs (Trémois), accompanied by the Composer: (a) A un enfant, (b) Fontaine de Bandusia, (c) Le Voyage, (d) Madrigal, (e) Bachic Song; Theme with Variations for Violin and Pianoforte (Messiaen), the Composer at the Pianoforte. 9.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—6.45 p.m., Le Journal Parlé. 7.0, Hot Jazz on Gramophone Records. 7.30, Sponsored Concert. 8.0, Medical Talk. 8.5, Talk on Aviation. 8.15, Interval. 8.30, Sponsored Concerts. 10.40, News.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Gramophone Records: Selection from The Merry Widow (Lehár); Selection from The Mikado (Sullivan). 8.0, Press Review and Weather. 12 Noon, Concert by the Radio Paris Orchestra: Overture, Fidelio (Beethoven); Arias and Chorus from Ernani (Verdi), on Gramophone Records; Selection from Mephistopheles (Boito); Cantilena and Sarabande from Cinq Mars (Gounod); Selection from Samson and Delilah (Saint-Saëns); Song from Esclarmonde (Massenet) on Gramophone Records; Two Arias from Hérodiade (Massenet) on Gramophone Records; Selection from Monna Vanna (Février); Death of Isolde from Tristan and Isolde (Wagner) on Gramophone Records; Ballet Music from Alcestis (Gluck); Alsatian Dances (Levadé). In the interval at 1.0 p.m., Exchange, News and Weather, and at 1.30, Exchange. 2.0, Exchange. 3.45, Exchange and Market Prices. 6.10, Agricultural Talk. 6.30, Elementary English Lesson. 6.50, Film Review. 7.0, Review of New Books. 7.20, Concert by the Radio Orchestra: Prelude to Axel (Georges); Interlude from Pepita Jimenez (Albéniz); Selection from Griselidis (Massenet); Saltarelle (Luigini). 7.45, Gardening Talk. 8.0, Le Pré aux Clercs—Opéra-Comique (Hérold). In the interval at 8.30, News, Weather and Sports Notes, and at 9.15, Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW. Relayed by **W8XK** on **48.86 metres** and **25.27 metres.**—9.0 p.m., Work-a-day Thoughts. 9.5, Business News. 9.15, Programme to be announced. 9.30, Weather Report. 9.32, Market Report. 9.45, Pianoforte Interlude. 9.50, David Lawrence Dispatch. 9.55, KDKA Artist Bulletin. 9.57, Programme Announcements. 10.0, Programme to be announced. 10.30, The Singing Lady, from **New York.** 10.45, Little Orphan Annie. 11.0, Our Daily Food, by Maude and Cousin Bill, from **New York.** 11.15, Time Signal. 11.16, Temperature Report. 11.17, Teaberry Sport Review. 11.22, Press News-Reeler. 11.27, Strange Facts. 11.29, Weather Report. 11.30, Westinghouse Watchmen. 11.45 to 3.15 a.m. (Tuesday), New York Relay. 11.45, To-day's News by Lowell Thomas. 12 Midnight, Pepsodent Amos 'n' Andy. 12.15 a.m., Tastyeast Jesters. 12.30, Five Star Theatre, by the Marx Brothers. 1.0, Cliquot Club Eskimos. 1.30, Time Signal and Don Carney—a Talk for Dog Lovers. 1.45, Phillips Lord in The Country Doctor. 2.0, Sinclair Minstrels. 2.30, Jack Frost Melody Moments. 3.0, Alice Joy. 3.15, Bridge School of the Air by E. Hall Downes. 3.30, Samuel Di Primio (Tenor). 3.45, Bradley Kincaid. 4.0, Temperature Report. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.13, KDKA Artist Bulletin. 4.15, Press Last Minute News. 4.20, Henry Halstead and his Californians. 5.0, Hotel Bismarck Orchestra, from **New York.** 5.30, Time Signal and Goodnight.

PORSGRUND.—See **Oslo.**

POZNAN

335 metres; 1.9 kW.—5.30 p.m., Linguaphone French Lesson. 5.45, Topical Talk. 7.0, See **Warsaw.** In the intervals, Amusement Guide. 9.0, Time Signal, Sports Notes and Police Report.

PRAGUE

488.6 metres; 120 kW.—3.10 p.m., See **Bratislava.** 4.10, Talk. 4.20, Talk. 4.30, Programme for Children. 4.50, Light Music on Gramophone Records. 5.5, Agricultural Talk. 5.15, Talk for Workers. 5.25, News in German. 5.30, German Transmission. Talk: The Evolution of Man and Animals. 6.0, Chimes from the Church of St. Loudmila. 6.5, News. 6.10, English Lesson for Beginners. 6.25, See **Brno.** 7.25, Talk: Political Crimes. 7.40, See **Brno.** 8.0 (in the interval), Time Signal. 8.10, Running Commentary on the International Ice Hockey Championship in the Winter Stadium. 8.30, Pianoforte Recital by Ludmila Földesy-Hermann. Melody (Couperin); Variations in D on a Minuet by Duport (Mozart); Etudes, Op. 25, in F Minor and E Minor (Chopin); Nocturne, Op. 27, in D Flat (Chopin); Jeux d'eau (Ravel). 9.0, Time Signal. 9.2, News and Sports Notes. 9.15, Running Commentary from the Winter Stadium (contd.). 10.0 (approx.), Close Down.

FEB. 20th **MONDAY** *continued*

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres, 25 kW.; **LAUSANNE, 680 metres;** and **GENEVA, 760 metres.**—7.0 p.m. (from **Lausanne**), Talk. 7.30 (from **Lausanne**), Concert by the Radio Orchestra, conducted by Félix Weingartner: Overture, Der Freischütz (Weber); Eighth Symphony in F (Beethoven); Fourth Symphony in E Flat (Bruckner). 8.20 (in the interval), News and Weather. 9.20 (approx.), Close Down.

REYKJAVIK

1,200 metres; 21 kW.—8.30 p.m., Weather Report. 8.40, Musical Programme and Announcements. 9.0, Chimes. 9.2, News Bulletin. 9.30, Reading. 10.0, Popular Concert by the Station Quartet, with Songs.

RJUKAN.—See **Oslo.**

ROME

Call 1RO, 441 metres; 50 kW. Relayed by **Naples, 319 metres,** and **2RO, 25.4 metres.**—7.0 a.m., Gymnastics. 7.15 to 7.30, Giornale Radio and Announcements. 11.30, Weather and Light Music on Gramophone Records. 12 Noon, Time and Announcements. 12.2 to 1.15 p.m., Concert from **Turin.** 3.45, Programme for Children. 4.10, Announcements. 4.15, Exchange and Giornale Radio. 4.30, Concert, by the Trio di Roma, from the Royal Philharmonic Academy. 6.10 (**Naples**), Shipping and Sports Notes. 6.15, Agricultural Report and Dopolavoro Notes. 6.20, Giornale Radio. 7.0, Time, Announcements, and Light Music on Gramophone Records. 7.30, Sports Notes and Tourist Report. 7.45, Concert of Light Music: Melody (Clarly); Songs: (a) Canzone 'e malavita (de Curtis), (b) Mani di velluto (Staffelli), (c) Io te vurria vasà (Di Capua); Duet (Valdes); Atlantis (Robrecht); Songs: (a) O' surdato (de Crescenzo), (b) Canto siciliano (Favara), (c) Napule è na canzona (Mario), (d) Parlez-moi d'amour (Lenoir); Hawaiian Guitar Solo, Sogno hawajano (Restano); Fior d'Andalusia (Fiasconaro); Day by Day (Nicholls); Talk; Potpourri (Dostal); Songs: (a) Ombre di donne (Checcucci), (b) Sevillanita (Valdes), (c) Sensi, signora (Simi), (d) La fiera di Mastro Andrea; Melody (Escobar); Duet: Quando? (Taghe Hara); Ninna nanna del Balilla (Del Pelo); Kiss for Kiss (Rose); Songs: (a) Canto siciliano (Favara), (b) Oh! Rumba, Rumba (Dax); Sarà, ma non ci credo (Franco). 9.55, News Bulletin.

SALZBURG.—See **Vienna.**

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 379.5 metres; 50 kW. Relayed at intervals by **W2XAF** on **31.48 metres;** and by **W2XAD** on **19.56 metres.**—7.30 p.m., The Revolving Stage, from **New York.** 8.0, Talk, from **New York.** 8.15, Antoinette Halstead (Contralto). 12 Midnight, Jane Froman and her Band, from **New York.** 12.15 a.m. (Tuesday), Stock Reports. 12.30 to 2.30 a.m. (Tuesday), **New York** Relay. 12.30, Melody Keepsakes. 12.45, The Goldbergs. 1.0, Soconyland Sketches. 1.30, The Voice of Firestone. 2.0, A. and P. Gipsies. 2.30, Buick Programme—Paul Whiteman's Orchestra, followed by Programme Resumé.

SCHWEIZERISCHER LANDESSENDER

BEROMUNSTER, 459 metres; 60 kW.; **BASLE, 244.1 metres;** and **BERNE, 245.9 metres.**—11.28 a.m., Time Signal from Neuchâtel Observatory. 11.30, Weather and News. 11.40, Popular Melodies from All Quarters of Switzerland." 12.35 to 12.45, Weather and Exchange. 2.30, Popular Music on Gramophone Records. 3.30, Concert by the Small Station Orchestra. 4.0, Popular Music on Gramophone Records. 4.30 to 5.30, Interval. 5.30 (from **Zürich**), Talk: Wireless Dangers and Risks. 6.0, Time and Weather. 6.15 (from **Zürich**), Legal Talk. 6.45 (from **Zürich**), Werner Wehrli Concert by the Radio Orchestra, conducted by Hermann Hofmann. Soloists: Alice Frey-Knecht (Soprano), Walter Frey (Pianoforte), Jakob Margoler ('Cello), Otto Andina (Flute) and Otto Strauss (Pianoforte). 8.30, Weather and News. 8.40 (from **Zürich**), The Day's Wage.—a Dramatic Story (Bührer). 9.15, Report on the Finals of the International Wrestling Competition, relayed from the Küchlin Theatre, **Basle.** 10.0 (approx.), Close Down.

SOTTENS.—See **Radio-Suisse Romande.**

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by **Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,348 metres; Ostersund, 770 metres;** and **Sundsvall, 542 metres.**—4.5 p.m., Orchestral Concert: Waltz, Habanera (Waldteufel); Folk Melodies (Ek); Suite (Amadei); Tango (Stransky); Two Hungarian Dances (Brahms). 4.45, Reading. 5.15, Concert by the Salvation Army Band, with Talk by E. Malmström. 6.15, Weather and News. 6.30, Talk. 6.50, Pianoforte Recital by Judith Malmquist: Pastorale and Caprice (Scarlatti); Fantasia in F Minor (Chopin); Jeux d'eau (Ravel). 7.15, Talk. 7.45, Concert by the Göteborg Chamber Orchestra. Conductor: Tor Mann: Suite, Divertimento elegiaco (Rangström); Första mötet, from Gurre (Halvorsen); An den Frühling (Grieg); Romance in C, Op. 42 (Sibelius); Three Folk Tunes (Kallstenius); Serenade No. 1 in C, Op. 62 (Volkmann). 8.45, Weather and News. 9.0, Gramophone Cabaret. 10.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert of Classical Music. 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Light Music on Gramophone Records. 2.0 to 4.45, Interval. 4.45, French Lesson. 5.0, Orchestral Concert. Conductor and Soloist: M. Roskam ('Cello). March, Sempre avanti (Léopold); Slav Caprice (Bayer); Overture, Die schöne Galathée (Suppé); Waltz, Galanterie (Léopold); Selection from La Mascotte (Audran); Andante for 'Cello and Orchestra (Goltermann); The Eagle (MacDowell); Moon Pictures (MacDowell); Minuet from the Sonata in E Minor (Grieg); Piedmontese Dance No. 1 (Sinigaglia); Suite variée (Pierné). 6.0, Literary Review. 6.15, Talk in French: A Journey through Lorraine. 6.30, Orchestral Concert, conducted by Maurice de Villers. Overture, Mignon (Thomas); Selection from Tiefland (d'Albert); Hungarian Rhapsody No. 12 (Liszt); Suite pittoresque (Pessard); Fête polonaise (Chabrier). 7.30, Time and News. 7.45, Concert of Jazz Music, conducted by M. Roskam. 8.25, Lottery Results. 8.30, Concert, arranged by the Cercle artistique de l'Est, relayed from **Nancy.** Suzanne Liéval (Songs); Andrée Leclerc (Violin); Henriette Urbain (Recitations); Marie-Rose Gerber (Pianoforte); Maurice Jacquet (Recitations); and Réne Vautrin (Songs). Pianoforte Solo: First Movement from the Second Concerto in G Minor (Saint-Saëns); Songs: (a) Solveig's Song from the Peer Gynt Suite (Grieg), (b) Theme and Variations (Proch); Violin Solo: Malagueno (Sarasate); Recitations: (a) A Ninon (de Musset), (b) Un vieux lapin (Richepin); Pianoforte Solos (Chopin); Preludes, Nos. 3, 7, 11, 14, and 16; Songs: (a) Aria from The Merry Wives of Windsor (Nicolai), (b) Ophelia's Ballad from Hamlet (Thomas); Violin Solos (Saint-Saëns): Introduction and Rondo Capriccioso; Songs: (a) Aria from The Messiah (Händel), (b) Aria from Boris Godunov (Mussorgsky). In the interval, Talk. 10.15 (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres, 60 kW.; and **FREIBURG, 570 metres.**—12.30 p.m., Radio Report on the German International Ski Championship, relayed from Freudenstadt. 1.0, Sponsored Music. 1.15 (from **Karlsruhe**), Sponsored Music. 1.30, Spanish Lesson. 2.0 to 2.30, Elementary English Lesson. 3.35 (from **Mannheim**), Talk: Hugo Wolf's Travels through South Germany and the Palatinate. 4.0, Concert by the Radio Orchestra, conducted by Gustav Görlich; Soloists: Gerda Hansi (Soprano) and Eberhard Schrempf (Baritone): Overture to an Opera (Lortzing); Baritone Solo, Romance from Das Nachtlager in Granada (Kreutzer); Clog Dance from Czar and Carpenter (Lortzing); Soprano Solo, from Der Freischutz (Weber); Arietta and Duet from The Magic Flute (Mozart); Overture, The Nuremberg Doll (Adam); Baritone Solo: Valentine's Prayer from Faust (Gounod); Soprano Solo, Mimi's Aria from La Bohème (Puccini); Humorous Overture, Hokus Pokus (Leuschner); Waltz, Faschingskinder (Ziehrer). 5.10, Time, Weather, and Market Prices. 5.20, Talk: Engineering in Germany. 5.45, Time and News. 5.50, See **Frankfurt.** 6.15, Das Forsthaus im Murrhardter Wald-Winter Idyll (Hans Karl Abel). 7.0, Folk Songs from the East—Hungaria, Transylvania, Romania, Greece, Japan, Russia, and Poland—A Recital by Brunhild Möckesch (Soprano), Max von Wistinghausen (Baritone), Heinrich Dütsch (Clarinet), and Traute Zarges (Pianoforte). 7.35 (from **Mannheim**), Reading: The Devil builds a Church (Hermann Moos). 8.0, Concert by the Stuttgart Philharmonic Orchestra and the Station Choir, conducted by Emil Kahn: Overture, Agrippina (Handel); Laughing Chorus from L'Allegro (Handel); March in C (Mozart); Zögernd leise—Serenade for Women's Choir and Contralto (Schubert); Andante from the Third Symphony (Bruckner); Stabat Mater (Verdi). 9.0, Time, News, Weather, and Programme Announcements. 9.15, Chess Lesson. 9.40, Concert from **Langenberg.** 11.0, Report on the Sixth Stuttgart Six Days' Racing, relayed from the Stadthalle. 11.30 (approx.), Close Down.

SUNDSVALL.—See **Stockholm.**

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—7.0, Tourist Report. 7.15, News, Horse Racing Results and Market Prices. 7.25, Local News. 7.30, Programme by a Viennese Orchestra. 8.0, Opéra-Comique Music. 8.15, Accordion Solos. 8.30, Light Music. 8.45, Violin Solos. 9.0, Music Hall Concert. 9.30, Concert. 10.0, Orchestral Music. 10.15, North African News. 10.30, Concert for Listeners in Morocco. 11.0, Concert. 11.30, Programme in English by the I.B.C.: Marching along together; Mad about the Boy; She was only Somebody's Daughter; The Younger Generation; Marry me; Round the Bend of the Road; After to-night we say Good-bye; Love is the Sweetest Thing. 12 Midnight, Weather and Announcements. 12.5 a.m. (Tuesday), Music by an Argentine Orchestra. 12.15, Military Music. 12.30 (approx.), Close Down.

TRIESTE

247.7 metres; 10 kW.—4.10 to 6.35 p.m., See **Turin.** 6.35, Musical Programme from the Café Dante 7.0 till Close Down, see **Turin.**

TRONDHEIM.—See **Oslo.**

TURIN

273.7 metres; 7 kW. Relayed by **Milan, 331.5 metres; Genoa, 312.8 metres;** and **Florence, 500.8 metres.**—4.10 p.m., Light Music on Gramophone Records. 4.30, See **Rome.** 5.35, Agricultural Report and Dopolavoro Notes. 6.0 to 7.0, Variety Music on Gramophone Records. In the intervals at 6.20, Giornale Radio, and at 6.30, Time and Tourist Report. 7.0, Giornale Radio, Weather, and Variety Music on Gramophone Records. 7.30, Concert of Chamber Music: Margherita Cossa (Soprano) and Alfredo Tazzoli (Pianoforte); Piccola ballata (Santoliquido); Songs: (a) Filli, Filli (Pasquini), (b) Aria from Demofonte (Cherubini); Sevilla (Albéniz); Aria from Beatrice di Tenda (Bellini); Fantasia in F Minor (Chopin); Songs: (a) Nocturne (Franck), (b) Cäcilie (Richard Strauss), (c) Serenata indiana (Castelnuovo-Tedesco). 8.20, A Comedy in One Act. 9.0 (approx.), Orchestral Concert, conducted by Ugo Tansini: Overture, Iphigénie en Aulide (Gluck); Pastoral Symphony (Tartini); Pensiero poetico (Scassola); Minuet for Strings (Fino); Prelude to the Third Act of Santa poesia (Cortopassi); Tarantella-capriccio, Castellammare (Brunetti). 10.0, Giornale Radio.

VATICAN CITY

19.84 metres (Morning) and **50.26 metres (Evening);** 10 kW.—10.0 to 10.15 a.m., Religious Information in Italian. 7.0 to 7.15 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by **Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 245.9 metres;** and **Salzburg, 218.5 metres.**—4.0 p.m., Concert by the Karl Haupt Orchestra. 5.5, Talk: Mankind in the Making. 5.30, Recital of Ludwig Kaiser's Songs for the First Anniversary of his Death: Der Kranke im Garten, Meiner Mutter, Mutter und Kind, Ich bin dein Kind, Du weicher Druck der warmen Hände, Frühling. 5.40, A Discussion with Art Students: The Painter and the Sculptor. 6.5, English Lesson. 6.25, Time, Weather, and Programme Announcements. 6.35, Der Corregidor—Opera in Three Acts (Hugo Wolf). In an interval at 8.5 (approx.), News, Weather, and Announcements. 9.5, Dance Music by the Astoria Band, relayed from the Sacher Café.

WARSAW

1,411 metres; 120 kW.—10.58 a.m., Time Signal and Bugle Call from the Tower of St. Mary's Church, Cracow. 11.5, Programme Announcements. 11.10, Light Music on Gramophone Records. 12.20 p.m., Weather Forecast. 12.25 to 2.10, Interval. 2.10, Announcements. 2.15, Economic Notes. 2.25, Traffic Report. 2.35, Answers to Correspondents. 2.50, Popular Music on Gramophone Records. 3.25, Elementary French Lesson. 3.40, Talk on Economics: Capital. 4.0, Violin and Pianoforte Recital by S. Ossendowska and E. Zaleska. Sonata in F Sharp Minor for Violin and Pianoforte (Rohoziński); Pianoforte Solos: (a) All'antico (Statkowski), (b) Cracovienne (Paderewski), (c) Liebestraum (Liszt), (d) Die Nachtigall (Liszt); Violin Solos: (a) Air antique (Rozycki), (b) Hungarian Poem (Lederer), (c) Midnight Bells (Kreisler), (d) Bolero (Hubay), (e) Lotus Land (Cyril Scott-Kreisler), (f) Dance of the Cannibals (Ossendowska). 4.55, Programme Announcements. 5.0, Concert of Light Music, relayed from the Café Italia. In the interval, Topical Notes. 5.50, Miscellaneous Items. 6.20, Answers to Agricultural Correspondence. 6.30, Topical Talk. 6.45, Radio Journal. 7.0, Concert by the Station Orchestra, conducted by Oziminski. Soloist: Niemczyk (Violin). Overture, Le Conte (Moniusko); Love Song and Gipsy Dance from Manru (Paderevski); Violin Solos: (a) Lithuanian Song (Szeligowski), (b) Allegretto (Boccherini-Kreisler), (c) Prelude in E (Bach-Kreisler), (d) Bercense (Fauré), (e) Waltz (Brahms), (f) Polish Dance (Paderevski); Suite, Le roman de la momie (Tcherepnin). 8.0, Sports Notes. 8.5, Radio Journal. 8.10, Concert (contd.): Overture, Die Weihe les Hauses (Beethoven); Minuet (Boccherini); Violin Concerto in A Minor (Vivaldi); Three Airs from Die Geschöpfe des Prometheus (Beethoven). 9.0, Answers to Technical Correspondence. 9.15, Dance Music. 9.55, Aviation Weather Report and Police Notes. 10.0, Dance Music from the Adria Café.

ZURICH.—See **Schweizerischer Landessender.**

TUESDAY

FEBRUARY THE TWENTY-FIRST

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL Orchestral concert. Professor Cyril Burt: "The Psychology of Leisure." "The Captain of Köpenick," a play.

LONDON REGIONAL Concert from Houldsworth Hall, Manchester. Troise and the Mandoliers. Military Band programme. Choral and instrumental concert.

MIDLAND REGIONAL Orchestral music. Choral concert. Light music.

NORTH REGIONAL Concert from Houldsworth Hall, Manchester. Mr. W. L. Andrews: "Fortnightly Review of Northern News." The Tyneside Mummers in Mirth and Melody.

WEST REGIONAL A Welsh programme. National programme.

SCOTTISH REGIONAL A discussion on Scottish agriculture between the Earl of Elgin, Sir Robert Greig, and Mr. Joseph F. Duncan. Orchestral concert. Lessons in Scottish country dancing, by Mr. J. M. Duthie.

BELFAST Dance music. Orchestral concert. National programme.

ABROAD

COPENHAGEN Concert of Viennese music.

HAMBURG The Brunswick Theatre Orchestra.

HILVERSUM Operatic music by the Wireless Orchestra.

LEIPZIG The Dresden Chamber Orchestra, conducted by R. Fricke.

STRASBOURG Orchestral and choral concert from the Conservatoire, Metz.

ATHLONE

413 metres; 60 kW.; and **CORK, 224.4 metres.—1.30 to 2.0 p.m.,** Time Signal, Weather Report, Stock Report, and Light Music on Gramophone Records. **6.0,** Popular Music on Gramophone Records. **6.15,** Programme for Children. **7.0,** Light Music on Gramophone Records. **7.15,** News Bulletin and British Market Report. **7.30,** Time Signal. **7.31,** Gaelic Talk. **7.45,** Val Vousden (Entertainer). **8.0,** Classical Concert by the Station Orchestra. **8.30,** Sonata (Beethoven) by Sydney Green (Pianoforte). **8.50,** Favourite Overtures by the Station Orchestra. **9.30,** Dramatic Programme by The Mystics. **10.0,** Irish Music by the Station Orchestra. **10.30,** Time Signal, News, Weather Report, and Close Down.

BARCELONA

RADIO-BARCELONA, Call EAJ1, 348.8 metres; 8 kW.—**6.0 p.m.,** Trio Concert. **7.0,** Request Gramophone Concert. **7.30,** Exchange Quotations and Talk on Art. **8.0,** Popular Music on Gramophone Records and News Bulletin. **9.0,** Chimes from the Cathedral, Weather Forecast, Messages to Seamen, Exchange Quotations, and Market Prices. **9.10,** An Opera relayed from the Gran Teatro del Liceo. **11.0** (in an interval), News Bulletin.

BARI

269.8 metres; 20 kW.—**7.0 p.m.,** Agricultural Notes, Tourist Talk and Dopolavoro Notes. **7.20,** Giornale Radio and Weather Forecast. **7.30,** Time Signal and Announcements. **7.35,** Relay of an Opera from the Teatro Petruzzelli. In the intervals: Theatre Notes and Talk. News Bulletin, after the Opera.

BASLE.—See **Schweizerischer Landessender.**

BELGRADE

430.4 metres; 2.8 kW.—**6.0 p.m.,** Concert by the Radio Orchestra: Overture, Light Cavalry (Suppé); Scherzo in D Minor (Krstic); Serbian Dance (Urban); Ballet Music from The Legend of Thrym (Hartmann); International Dance Suite (Mannfred); Gallop, Durchs Ziel (Translateur). **7.0,** Dora Pejacavic Concert, relayed from **Zagreb, 307 metres. 9.0,** Time and Dance Music from the Ratnicki Dom.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres, 60 kW.—**12.35 p.m.,** News Bulletin. **1.0,** Gramophone Concert from **Berlin (Witzleben). 2.0,** Talk for Young People; Pictures of the Eventful Year 1918. **2.30,** Weather and Exchange. **2.45,** Reading, Der Steinbruch (Karl Maertin). **3.0,** Talk for Women. **3.30,** See **Leipzig. 4.10,** Topical Talk. **4.30,** Chamber Music: 'Cello Recital by Hermann Weil: Song of the Troubadour (Glazunov); Minuet (Joseph Marx); Hymnus (Paul Dessau); Scandinavian Romance (Heinz Tiessen); Scherzo (Max Reger). **5.0,** Talk: Aspects of German Trade—East Germany, Silesia, the Mark and East Prussia. **5.30,** Dialogue on the Introduction to the Eroica Symphony (Beethoven). **5.55,** Weather and Announcements. **6.0,** Talk: Study or Practical Instruction? **6.30,** A Poem. **6.35,** Political Press Review. **7.0,** Fateful Hours in Count Yorck's History. A Play in Five Acts (Hans Kyser, arranged for Radio). **8.35,** Concert from **Berlin (Witzleben). 9.15,** Weather, News and Sports Notes. **9.45,** Weather Report for Shipping. **10.0,** Concert from **Hamburg. 11.0** (approx.), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—**6.0 p.m.,** Topical Talk. **6.10,** Concert of Light Music from the Eden Pavillion. **6.45,** A Game with the Globe—Programme arranged by Oda Weitbrecht. **7.45,** Beethoven Recital by Artur Schnabel, relayed from the Philharmonie: Sonata in F Minor, Op. 57. **8.10,** Folk Songs. **8.35,** Beethoven Sonata Recital (contd.): Sonata in E Minor, Op. 90; Sonata in B Flat, Op. 22. **9.15,** Weather, News and Sports Notes. **9.50** (approx.), Concert from **Hamburg. 11.0** (approx.), Close Down.

BERNE.—See **Schweizerischer Landessender.**

BEROMUNSTER. — See **Schweizerischer Landessender.**

BODEN.—See **Stockholm.**

BODO.—See **Oslo.**

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—**7.30 p.m.,** Announcements and Exchange Quotations. **7.40,** Popular Music on Gramophone Records. **7.55,** Lottery Results. **8.0,** Talk on Photography. **8.15,** News Bulletin and Weather Forecast. **8.30,** See **Strasbourg.**

BRATISLAVA

279 metres; 14 kW.—3.10 p.m., See **Moravská-Ostrava. 4.10,** See **Prague. 4.20,** Popular Music on Gramophone Records. **4.50,** Talk. **5.5,** See **Prague. 5.25,** Light Music on Gramophone Records. **5.45,** Slovak Spelling Lesson. **6.0,** See **Prague. 6.25,** A One-Act Comedy (Novak). **6.50** till Close Down, See **Prague. 10.0** (approx.), Close Down.

BREMEN.—See **Hamburg.**

BRESLAU

325 metres, 60 kW.; and **GLEIWITZ, 253 metres.—12.10 p.m.,** Gramophone Concert: Selection from La belle Hélène (Offenbach); Gavotte from Mignon (Thomas); Was kommt dort von der Höh' (Suppé-Lochmann); Serenata Op. 15 No. 1 (Moszkovski); Waltz from Der Rosenkavalier (R. Strauss-Loeber); Hungarian Czardas No. 7, Zika (Michiels); Leháriana (Geiger). **12.45,** Time, Weather, News and Exchange. **1.5,** Gramophone Concert: Overture, The Flying Dutchman (Wagner); Elsa's Dream, Einsam in trüben Tagen from Lohengrin (Wagner); Humoresque Op. 101, No. 7 (Dvorák); Hunters' Chorus from Der Freischütz (Weber); Invitation to the Dance (Weber); Waltz, Tales from the Vienna Woods (Joh. Strauss); Mein Herr, was denken Sie von mir (Joh. Strauss). **1.45,** Sponsored Programme with Gramophone Records. **2.10,** Agricultural Prices. **2.30,** Talk: The Dangers of Poisoning in Everyday Life. **3.0,** Concert: Trude Behr (Soprano); Irene Weissenberg (Pianoforte), Reinhold Birke (Oboe), Carl Rau (Saxophone), and Gustav Siegert (Bassoon). Fantasia in F Minor (Chopin); Melodies (Mozart): (a) Rondo from Der Schauspieldirektor, (b) Die Zufriedenheit, (c) Die Verschwiegung, (d) Aria from Così fan tutte; Spitue for Oboe, Tenor, Saxophone and Bassoon (Wagner); Songs (Brahms): (a) Mädchenfluch, (b) Bei dir sind meine Gedanken, (c) Klage, (d) Vorschneller Schwur. **4.0,** Book Review. **4.15,** Agricultural Market Prices and Topical Talk. **5.0,** Programme for Children. **5.30,** Kurt Heynicke reads from his own Works. **6.0,** Talk on Atmospherics. **6.10,** Talk: Forgotten Silesian Handicrafts. **6.40,** Weather for Farmers. **6.45,** Toscanini conducting the New York Philharmonic Symphony Orchestra, on Gramophone Records: First Movement from the Fourth Symphony in D—the Clock (Haydn); Overture, The Barber of Seville (Rossini); L'apprenti sorcier (Dukas); Prelude to Acts I and III of La Traviata (Verdi); Scherzo from A Midsummer Night's Dream (Mendelssohn). **7.0,** See **Langenberg. 7.50,** News. **8.0,** Concert in aid of the Winter Relief Fund, relayed from the Hofjäger Brunswick. **9.0,** Time. **9.30,** Time, Weather, News, Sports Notes and Programme Announcements. **9.50,** Political Press Review. **10.15,** Theatre Notes. **10.30,** Concert from **Hamburg. 11.0** (approx.), Close Down.

BRNO

342 metres; 35 kW.—**3.10 p.m.,** See **Moravská-Ostrava. 4.10,** Story Reading. **4.20,** See **Prague. 4.50,** Esperanto Lesson. **5.0,** Music Review. **5.15,** Talk for Workers: Bulgaria. **5.25,** German Transmission: News, Agricultural Report and Two Talks. **6.0,** See **Prague. 6.10,** Talk, relayed from the Huss House: Modern Unrest. **6.50,** See **Prague. 8.35,** Review of New Gramophone Records. **9.0,** See **Prague. 10.0** (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—**12 Noon,** Chabrier Concert on Gramophone Records: Extracts from Le Roi malgré lui: (a) Overture, (b) Le polonais est triste et grave, (c) Je suis du pays des gondoles; Scherzo-valse; Ronde villageoise; L'île heureuse; Fête polonaise from Le Roi malgré lui; Lied; España. **12.40 p.m.,** Rachmaninov Pianoforte Recital by Malva Rondden: Polichinelle; Prelude in G Minor; Piece. **1.0,** Le Journal Parle. **1.10,** Ballet Music by the Small Orchestra, conducted by P. Leemans: Ballets from (a) La Juive (Halévy), (b) Philémon et Baucis (Gounod); Ballet de Cour (Pierné); Ballet Music from The Two Widows (Smetana). **5.0,** Concert by the Radio Orchestra, conducted by Franz André: Overture, Si j'étais Roi (Adam); Ballet Music from Mation (Massenet); Overture, Gwendoline (Chabrier); Selection from The Daughter of the Regiment (Donizetti). **5.30,** Programme for Children. **6.5,** Literary Review. **6.15,** Bach Music on Gramophone Records: The Brandenburg Concerto; Prelude in E. **6.30,** Concert of Sacred Music by the Rev. Father Plum. **7.15,** Report of the Belgian Catholic Radio Society. **7.30,** Talk for Women. **8.0,** Concert by the Radio Orchestra, conducted by Franz André: Girl (Poot); Pacific No. 231 (Honegger); Symphonic Suite (Ibert); Selection from Le Train bleu (Milhaud); Elegy (Tchaikovsky); Trois petites pièces montées (Satie); Elévation (De Bréville); Berceuse (Ravel); Pavane pour une Infante défunte (Ravel). **8.45,** Talk. **9.0,** Schumann Concert by the Symphony Orchestra, conducted by Jean Kumps: Soloist, M. Kulmer ('Cello): Overture, Genoveva; Concerto in A Minor for 'Cello; Overture, Manfred; Overture, Scherzo and Finale from Op. 52. **9.45,** Poetic Transpositions for the Pianoforte. **10.0,** Le Journal Parlé. **10.10,** Request Gramophone Records; La Saint Cyprienne (Housiaux); Regimental March (Honney); Selection from The Dollar Princess (Fall); Judex from Mors et Vita (Gounod); Cigány Song; Was kommt dort von der Höh (Suppé); Chinese Dance (Tchaikovsky); Selection from Le Furie d'Arlechino (Lualdi). **10.55,** Christus vincit (Liszt). **11.0** (approx.), Close Down.

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW. Programme in Flemish.—**12 Noon,** Concert by the Little Station Orchestra, conducted by P. Leemans: Parade of the Gnomes (Tapp); Russian Waltz Potpourri, Around the Volga (Borchert); Serenata (Cacciali); Selection from Samson and Delilah (Saint-Saëns); Violin Solo, Ronde des Lutins (Bazzini); Gramophone Record, Invocation (Ganne); Tango (Niederberger); Waltz, Wenn du liebst, dann scheint die Sonne (Steffan); Selection from Frühling im Wienerwald (Ascher). **1.0 p.m.,** Le Journal Parlé. **1.10,** Gramophone Records of Famous Singers and Well-known Overtures: Overture, Carmen (Bizet); La fleur que tu m'avais jetée (Bizet), by G. Thill; Plaisir d'amour (Martini), by Panzera; Overture, Le Roi malgré lui (Chabrier); Song (Crescenzo), by Caruso; Le Cor (Flégier), by Narcon; On Wings of Song (Mendelssohn), by Lotte Lehmann; La Partida (Alvarez), by Tito Schipax; Overture, The Italian Girl in Algiers (Rossini); Ay Ay Ay (Perez-Freire), by Fleta; Serenata (Tosti), by Galli Curci; Overture, Die Fledermaus (Joh. Strauss). **5.0,** Concert by the Symphony Orchestra, conducted by Jean Kumps: Overture, William Tell (Rossini); In the Steppes of Central Asia (Borodin); Serenade (Pierné); Ballet Music from Coppélia (Delibes); March from Tannhäuser (Wagner). **5.45,** Programme for Children. **6.30,** Concert by the Little Station Orchestra, conducted by P. Leemans: Marche Ethiopienne (Filipucci); Waltz, In Traumland (Fucik); Intermezzo (Kalkman); Suite, Scènes Brabançonnes (Sarly); Gramophone Record, Finale from Act III of Die Fledermaus (Joh. Strauss); Mazurka for Pianoforte (d'Agrèves); Arabesque (Montague Phillips); Foxtrot Fantasia, Flandria (Novno). **7.15,** Talk. **7.30,** Le Journal Parlé. **8.0,** Concert for the Third Anniversary of the S.A.R.O.V., relayed from Deurne: The De Vonk Symphony Orchestra, conducted by A. Rutten, and the Havana Dance Band, conducted by H. De Boey: Soloists, Jeanne Wassenaar (Pianoforte) and Henry Marchand (Songs); Recitations by Hendrik Bulterys; Wamba March (Gilcourt); In a Persian Market (Ketelbey); Recitations; Fourth Fantasia for Pianoforte (Benoit); Recitations with Pianoforte Accompaniment; Suite orientale (Popy); Talk; In the Seventh Heaven (Fetras); Hungarian Rhapsody No. 12 (Liszt); Four Songs, Selection from White Horse Inn (Benatzky). **10.0,** Le Journal Parlé. **10.10,** Concert (contd.): Pasodoble (Erwin); Foxtrot, Tiger Rag (La Rocca); One, two, three (Reisfeld); Four Songs, Marching along together (Steininger); Foxtrot, Crazy People (Leslie); Foxtrot, The Night when Love was born (Young); Foxtrot, Tell me to-night (Spoliansky); Foxtrot, Goodnight (Noble). **11.0** (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—**4.0 p.m.,** Concert of Light Music and Romanian Music by the Motzoi Orchestra. **5.0,** News and Time Signal. **5.10,** Talk. **5.25,** Concert by the Motzoi Orchestra (contd.). **6.0,** Talk on Romania: Her Oil Springs. **6.40,** Light Music on Gramophone Records. **7.0,** Symphony Concert by the Station Orchestra, conducted by M. Nottara: Soloist: Mlle. Emilia Gutiano (Songs); Overture, La Preciosa (Weber); Andante cantabile and Allegretto (Foerster); Meditation on an Old Gipsy Song (Suk); Recital of Romanian Songs; Symphony No. 3 (Mendelssohn). In an interval at **8.0,** Talk. **8.45,** News Bulletin.

BUDAPEST

550 metres; 18.5 kW.—Programme also relayed on **840 metres** from **6.25 to 11.0 p.m.—4.0 p.m.,** Pianoforte and Violin Recital by Stefan Szelenyi and Frau Szelenyi: Organ Prelude and Fugue in A Minor (Bach-Liszt); Sonata in G Minor (Tartini); Märchen, Op. 26, No. 3 (Medtner); La fille aux cheveux de lin (Debussy); Melody (Milhaud); Romanian Folk Dances (Bartok); Lotusland (C. Scott-Kreisler); Le Cynge (Saint-Saëns); Le petit Berger (Debussy); Die Biene (Schubert). **4.45,** Recitations. **5.15,** Concert of Cigány Music. **6.0,** Talk. **6.30,** Le Cheminean- Opera (Leroux), relayed from the Royal Hungarian Opera House, followed by Dance Music from the Café Bodo. **10.15,** Concert by the Sandor Farkas Cigány Band from the Café Bodo, with Gayla Szantho (Hungarian Folk Songs).

CASSEL.—See **Frankfurt.**

COPENHAGEN

281 metres; 0.75 kW.; and **KALUNDBORG, 1,153 metres;** 7.5 kW.—**11.0 a.m.,** Time and Chimes from the Town Hall. **11.5,** String Ensemble Concert, conducted by Harald Andersen, relayed from the Bellevue Strandhotel. **1.0 to 2.0,** Interval. **2.0,** Orchestral Concert, conducted by Emil Reesen. Soloist: Else Breidahl-Hemmert (Pianoforte). Overture, The Golden Cross (Brüll); Waltz from Cinderella (Palmgren); Love Scene from Scaramouche (Sibelius); Selection from Die toten Augen (d'Albert); Suite, Caucasian Sketches (Ippolitov-Ivanov); Gallop, En Sommernat paa Moens Klint (Lumbye); Pianoforte Solos: (a) Rondo capriccioso, Op. 14 (Mendelssoim), (b) Foraarstoner (Gade), (c) Polonaise, Op. 9, No. 6 (Paderewsky); Overture, Girofle-Girofla (Lecocq); Selection from Barbe-bleue (Offenbach); Suite, Jeux d'enfants (Bizet); Russian Dance (Tchaikovsky); Tarantella from Masaniello (Auber). **4.0,** Programme for Children. **4.40,** Exchange and Fish Market Prices. **4.50,** Talk: Potato Growing. **5.20,** German Lesson. **5.50,** Weather Forecast. **6.0,** News. **6.15,** Time Signal. **6.30,** Talk: The Danish National Characters. **7.0,** Chimes from the Town Hall. **7.5,** Recital of Swedish Songs by Adele Weino: Varsang (Eklöv); Songs (Peterson-Berger): (a) Mitt trollslott, (b) Sju rosor och sju cldar, (c) Semele; Villemo (Rangström); Songs (Sjögren): (a) Ro, ro ögonsten, (b) I drömmen du är mig nära; Song: Sommardofter (Alvén). **7.20,** The Father—

Tragedy in Three Acts (Strindberg). **8.50**, News. **9.5**, Concert of Viennese Music; The Station Orchestra, conducted by Fritz Mahler: Serenade No. 3 in D (Mozart); Melodies (Joh. Strauss, Sen.): (a) Waltz, Die Sorgenbrecher, (b) Annen-Polka; Overture, Indigo (Joh. Strauss). **9.50**, Dance Music from Nimb's Restaurant. In the interval at **11.0**, Time and Chimes from the Town Hall. **11.30** (approx.), Close Down.

CORK.—See **Athlone.**

CRACOW

312.8 metres; 1.5 kW.—**6.0 p.m.**, Miscellaneous Items and Announcements. **6.15**, Talk: Old Cracow. **6.30**, Talk on Music. **6.45** till Close Down, See **Warsaw.** **11.0** (approx.), Close Down.

DANZIG.—See **Heilsberg.**

DRESDEN.—See **Leipzig.**

DUBLIN.—See **Athlone.**

FECAMP

223 metres; 10 kW.—**12.0 Noon**, Military Music. **12.30 p.m.**, News Bulletin. **12.45**, Concert of Opera and Operetta Music. **6.0 to 7.0**, Programme in English by the I.B.C., C Danvers Walker, R. Chene, and B. McNab announcing. **6.0**, Organ Recital for Worthing Listeners; Turkish Patrol (Michaelis); A Perfect Day (Jacobs Bond); Selection from Cavalleria rusticana (Mascagni); On Wings of Song (Mendelssohn); Indian Love Call (Friml); Nola (Arndt); Roses of Picardy (Haydn Wood); American Patrol (Meachan). **6.30**, Xylophone Recital: for Bognor Listeners: Overture, Raymond (Thomas); Schön Rosmarin (Kreisler); The Skaters' Waltz (Waldteufel); Parade of the Minutes; Looping the Loop; Carnival of Venice (arr. Gaston); Marionette (Gaston); Tarantelle (Byng). **7.0**, Local News. **7.15**, Light Music on Gramophone Records. **7.30**, Radio Gazette. **8.0**, The Listeners' Quarter of an Hour. **8.15**, Talk. **8.30**, Concert, relayed from **Le Havre.** **10.0 p.m.** till Close Down, Programme in English by the I.B.C. **10.0**, Dance Music. **11.0**, Ketelbey Concert: In the Camp of the Ancient Britons; The Clock and the Dresden Figures; In a Chinese Temple Garden; Wedgwood Blue; The Sacred Hour; In the Mystic Land of Egypt. **11.30**, Popular Songs: Down Sunnyside Lane; For you; There's Something in your Eyes; Many Happy Returns of the Day; Heartaches; Just one more Chance; When you wore a Gingham Gown; Whistling in the Dark. **12.0 Midnight**, Variety Music: Selection from Splinters (Gibbons); Song: Body and Soul (Green); The Sport of Kings; Song: I'm a Dreamer; Accordion Solo: Medley of English Airs; Oi; Sometimes I'm happy (Youmans). **12.30 a.m. (Wednesday)**, Popular Songs; Banjo Solo: The Buffoon (Curzon); Gipsy Melody; Little Old Church in the Valley; One Hour with you; Say a little Prayer for me; Wabash Moon; Paradise; Banjo Solo: Fashionette. **1.0**, Music by a Hawaiian Band: Ay ay ay (Freire); Maria Mari (di Capua); Olaha Oe (Lilinokalani); O Sole Mio (di Capua); Hawaiian Hotel (Traditional); La Paloma (Yradier); Kilima (Traditional); My Waikiki Mermaid (Traditional). **1.30**, Light Orchestral and Vocal Concert: That Tiny Teashop (Raymond); Songs: (a) Around the Corner, (b) Granny's Old Armchair; Argentina Amor (Blum); Songs: (a) Down the Railroad Track, (b) Little Brown Jug, (c) I'm betting the Roll on Roamer; Crazy Pirouette (Frisk). **2.0**, Dance Music. **2.57**, I.B.C. Goodnight Melody. **3.0** (approx.), Close Down.

FLENSBURG.—See **Hamburg.**

FLORENCE.—See **Turin.**

FRANKFURT

259 metres; 17 kW.; and **CASSEL, 245.9 metres.**—**6.0 p.m.**, Talk on Trier, relayed from **Trier.** **6.30** (approx.), The Bells of Trier—a Radio Sequence. **7.30**, Concert by the Station Orchestra, conducted by Hans Rosbaud. Soloist: Helge Roswaenge (Tenor): Overture, Figaro (Mozart); Song from The Magic Flute (Mozart); Overture and Suite from Die Geschöpfe des Prometheus (Beethoven); Overture, Die Zwillingsbrüder (Schubert); Two Songs from Oberon (Weber); Overture, Oberon (Weber); Entr'acte from Die drei Pintos (Weber); Song from The Huguenots (Meyerbeer); Gipsy Scene from The Fair Maid of Perth (Bizet); Song from Sicilian Vespers (Verdi); Intermezzo from A basso porto (Spinelli); Intermezzo from William Ratcliff (Mascagni); Intermezzo from L'Amico Fritz (Mascagni); Two Songs from Turandot (Puccini); Overture, Un Carnaval romain (Berlioz). **9.20**, Time, News, Weather and Sports Notes. **9.45**, See **Stuttgart.** **11.0** (approx.), Close Down.

FREDRIKSSTAD.—See **Oslo.**

FREIBURG.—See **Stuttgart.**

GENEVA.—See **Radio-Suisse Romande.**

GENOA.—See **Turin.**

GLEIWITZ.—See **Breslau.**

GOTEBORG.—See **Stockholm.**

GRAZ.—See **Vienna.**

HAMAR.—See **Oslo.**

FEB. 21st **TUESDAY** *continued*

HAMBURG

Call ha (in Morse), **372 metres**; 1.5 kW. Relayed by **Bremen, 269.8 metres; Flensburg, 227.4 metres; Hanover, 566 metres;** and **Kiel, 232.2 metres.**—**6.0 p.m.**, Agricultural Talk. **6.25**, Weather Report. **6.30** (from **Bremen**), Reading from the Works of Four North German Poets—Johann Brüdt, Carl Bradt, Marie Lüdeke, and Robert Drasdo. **7.0** (from **Hanover**), Winter Relief Programme from the Hofjäger. Part I: The Brunswick Theatre Orchestra, conducted by José Eibenschütz and Klaus Nettstracter; Soloists: Erna Kroll-Lange (Soprano) and Bernhard Jackschtat (Bass-Baritone); Academic Festival Overture (Brahms); Hochzeitslied (Loewe, arr. Robert Müller-Hartmann); Overture, Fingal's Cave (Mendelssohn); Soprano and Orchestra: Liebesfeier (Weingartner); Spanish Rhapsody (Chabrier); Song, Königin (Graener); Coronation March (Svendsen). Part II: Conductors: Adolf Secker and Otto Ebel von Sosen; Soloists: Erna Kroll-Lange, Herbert Ernst Groh, Erwin Bolt, and Bernhard Jackschtat (Songs); Pianoforte Solo: Fasching (Weiner); Song from The Song of Love (Strauss-Korngold); Serenade from Les Millions d'Arlequin (Drigo); Drinking Song from Der lachende Ehemann (Eysler); Overture, Wiener Frauen (Lehar); Duet from The Maid of the Black Forest (Jessel); Waltz from Die Faschingsfee (Kalman); Duet from Paganini (Lehar); Gallop from Orpheus in the Underworld (Offenbach); Norag Marsch (Horst Platen). **9.30**, Time and News Bulletin. **9.50**, Concert by the Norag Orchestra, conducted by Horst Platen; Soloist: Gerhard Gregor (Organ); Ballet Music from The Birds (Braunfels); Magische Ballade (Lukas Böttcher); Waltz Scene from Intermezzo (R. Strauss); Suite from L'Arlésienne (Bizet); Organ Solos: (a) Pastorale (Franck), (b) Tempo, di Minuetto (Guilmant); Waltz, Dynamiden (Jos. Strauss); Persian March (Joh. Strauss). **10.20** (in an interval), Ice Report.

HANOVER.—See **Hamburg.**

HEILSBERG

276.5 metres; 60 kW.; and **DANZIG, 453.2 metres.**—**12.5 p.m.**, Popular Music on Gramophone Records. In the interval at **12.20**, News. **1.30**, Sponsored Programme with Gramophone Records. **2.0**, Agricultural Prices and Exchange Rates. **2.30**, Musical Improvisations for Children. **3.0**, Concert by the Small Station Orchestra, conducted by Eugen Wilcken: Part I: Lincke Programme; Overture, Casanova; Waltz, Deutsche Grüsse; Amina; Lawn-Tennisspiele; Selection from Lysistrata. Part II: Leuschner Programme: Overture, Hokuspokus; Vom Frühling und Frau Minne; Chinesisches Märchen, Fantasia on Wolgageister; Comedy Overture, Mamsell Unnütz. In the interval, Humorous Topical Review. **4.45**, Wireless Technical Talk. **5.15**, Agricultural Prices. **5.20**, Ice Report. **5.30**, Talk on the Building Industry—the Bricklayer and the Carpenter. **6.0**, Shorthand Dictation. **6.15**, Roda Roda reads from his own Works. **6.50**, Talk: University Week in Allenstein. **7.0**, Weather and News. **7.5**, A Journey in the Snow—Radio Film (Rolf Herbert Kunze). **7.45**, Talk: Duke Albert of Prussia and the Beginning of a New Age. **8.10**, Military Band and Choral Concert, relayed from the Town Hall, Tilsit: Overture, 1813 (Weber); Songs at the Camp-Fire: (a) Die bange Nacht ist nun herum (Lyra), (b) Drüben am Wiesenrand (Krause), (c) Wohlauf, Kameraden aufs Pferd (Zahn); Choir and Band: (a) Des Grossen Kurfürsten Reitermarsch (Moltke), (b) Kürassier-Marsch (Simon), (c) Mereenaries' Song, (d) Swedish Cavalry March, (e) Old Hessian Cavalry March, (f) Cavalry Song, Drei Lilien, (g) Army March (Krause), (h) Regimental March, (i) Cavalry Song, Deine Söhne, Land im Osten, (j) Hanoverian Guards' March, (k) March of the Hanoverian Dragoons; Der Preussenmarsch (Golde). **9.10**, Weather, News and Sports Notes.

HILVERSUM

Announced **HUIZEN, 296.1 metres**; 20 kW. (7 kW. up to **4.40 p.m.**).—**11.55 a.m.** till Close Down, Programme of the Catholic Radio Society (K.R.O.). **11.55**, Concert by the K.R.O. Sextet. **1.40**, Talk. **2.15**, Programme for Women. **2.40**, Dressmaking Lesson. **3.40**, H.I.R.O. Programme. **4.50**, Violin and Pianoforte Recital by L. Wijngaarden and J. Ligtelijn: Sonata (Leken); Gramophone Records; Sonata in B Flat (Respighi). **6.10**, Esperanto Lesson. **6.30**, Light Music on Gramophone Records. **6.50**, Educational Talk. **7.10**, Police Notes. **7.25 to 7.40**, Interval. **7.40**, Concert by the K.R.O. Orchestra, conducted by M. Gerritsen: Overture, Friedensfeier (Reinecke); Selection from Die ländliche Hochzeit (Goldmark); Selection from Rosamund (Schubert). **8.10**, News. **8.15**, Brahms Pianoforte Recital by M. Andriessen: Intermezzo in A Minor, Op. 118, No. 1; Intermezzo in E Minor, Op. 119, No. 2; Intermezzo in C, Op. 119, No. 3; Caprice in G Minor, Op. 116, No. 3; Six Waltzes, Op. 39. **8.40**, Light Music on Gramophone Records. **8.55**, Concert by the K.R.O. Orchestra and M. Andriessen (Pianoforte): Overture, Titus (Mozart); Pianoforte Concerto in B (Mozart). **9.40**, Popular Music on Gramophone Records. **9.55**, Concert (contd.): Nos garçons (van Leeuwen); Overture, Stradella (Flotow); Selection from La fille de Madame Angot (Lecocq); Kirmes am Rhein (Dreissen); Potpourri, Musical Soap Bubbles (Urbach). **10.40**, News. **10.55**, Light Music on Gramophone Records. **11.40** (approx.), Close Down.

HORBY.—See **Stockholm.**

HUIZEN

Announced **HILVERSUM, 1,875 metres**; 8.5 kW.—**10.10 a.m.** till Close Down, Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.). **10.10 a.m.**, Organ Recital by Frans Hasselaar, with Violin Solos by Willy Kater. **10.40** (in the interval), Talk. **11.40**, Time Signal. **11.41**, Concert of Light Music and Songs. **2.10**, Variety Music on Gramophone Records. **2.40**, Talk. **3.40**, Pianoforte Recital by Ric Bente. Gavotte and Gigue (Bach); Impromptu in A Flat Minor (Schubert): Allegro moderato from the Sonata, Op. 58 (Chopin); Prelude in G Minor (Rachmaninov); Liebesfreud (Kreisler-Rachmaninov); Dance (Pick-Mangiagalli). **4.10**, Concert by a Children's Choir, conducted by Jacob Hamel. **4.40**, Tales for Children. **5.10**, Talk. **5.40**, Light Music on Gramophone Records. **6.10**, Talk. **6.40**, 'Cello and Pianoforte Recital by Raphael Lanes and Egbert Veen. **7.10**, English Lesson. **7.40**, Time Signal. **7.41**, News Bulletin. **7.45**, Concert of Opera Music by the Wireless Orchestra, conducted by Vincenzo Marini. Soloists: Sara Scuderi (Soprano), Rhea Toniolo (Mezzo-Soprano), Pietro Mariotti (Tenor), Antenore Reali (Baritone), and Dario Caselli (Bass). **8.35**, Recitations. **8.55**, Concert (contd.). **9.55**, Concert of Light Music by Kovacs Lajos and his Orchestra, with Songs by Bob Scholte. **10.40**, News Bulletin. **10.50**, Concert of Light Music (contd.). **11.40** (approx.), Close Down.

INNSBRUCK.—See **Vienna.**

KALUNDBORG.—See **Copenhagen.**

KIEL.—See **Hamburg.**

KLAGENFURT.—See **Vienna.**

KOSICE.—See **Prague.**

LANGENBERG

473 metres; 60 kW.—**12 Noon**, Orchestral Concert, conducted by Eysoldt. Reichswehr March (Ettinger); Overture, Oberon (Weber); Lyric Suite (Grieg); Catalan Caprice (Albéniz); Dance Scene, Scheherazade (Schmalstich); Selection from La Traviata (Verdi); Waltz, Summer Evening on the Rhine (Zimmer); Jacquelin (Krome); Bell Serenade (Kockert); March Potpourri, Wovon man spricht (Bernards). In an interval at **1.0 p.m.** (approx.), News. **1.30**, Sponsored Programme with Gramophone Records. **2.30**, Economic Notes and Time. **2.50**, Fairy Tales for Children. **3.20**, Notes on the Broadcasts for Schools. **3.30**, Talk: Geography made pleasant by Poetic Description: Talk with Examples. **4.0**, Concert by the Berber Quartet. Soloist: Gertrud Baumann (Soprano); String Quartet in C, Op. 20, No. 2 (Haydn); Four Songs (Marx): (a) Marienlied, (b) Japanisches Régenlied, (c) Hat dich die liebe berührt, (d) Und gestern hat er mir Rosen gebracht; Two Songs (Haas): (a) Die stille lieb'ich, (b) Wolken String Quartet in A Minor, Op. 29 (Schubert). **5.15**, Italian Lesson. **5.45**, Time, Weather, Economic Notes and Sports Report. **6.0**, Talk on Poultry-Keeping. **6.30**, Reading (Friedrich Griese). **6.55**, News. **7.0**, Variety Programme. **7.50**, Modern Ballad Recital. **8.15**, The God and the Bayadère—a Choral (Hermann Unger). **8.30**, Pianoforte Concerto, Op. 26 (Max Trapp) by the Station Orchestra, the Composer at the Pianoforte. **9.5**, News and Sports Notes, followed by Silent Night.

LAUSANNE.—See **Radio-Suisse Romande.**

LEIPZIG

389.6 metres; 120 kW.; and **DRESDEN, 319 metres.**—**12.0 Noon**, News, Weather and Time. **12.15 p.m.**, Gramophone Concert of Classical Music. After the Concert, Exchange Quotations. **1.0**, Talk: An Unemployed Man takes to the Road. **2.0**, Dramatic Programme for Children by Children. **2.35**, Exchange and Market Prices. **3.0**, Legal Talk for Workers. **3.30**, Concert by the Orchestra of the Friedrichtheater, Dessau, conducted by Gustav Mannebeck. Overture to the Fairy Play, Aladdin, Op. 79 (Reinecke); Selection from Hansel and Gretel (Humperdinck); Entr'acte from Der Amtmann von Giebichenstein (Frey); Levantine Rondo (Unger); Lagoon Waltz from a Night in Venice (Joh. Strauss). **4.30**, Weather and Time. **4.50**, Exchange Quotations. **5.0**, Dialogue for Parents. **5.30**, French Lesson. **5.50**, Introductory Talk to the Gewandhaus Concert on February 23rd. **6.0**, Talk: The Ape-Man—Recent Anthropological Research. **6.15**, What People are talking about in America, relayed from **America** (on Gramophone Records). **6.30**, See **Frankfurt.** **7.30**, Concert of Light Music by the Emdé Orchestra. Overture, Princess Rosina (Lincke); Waltz, Transaktionen (Jos. Strauss); Paraphrase on the Song, Ich hatte einst ein schönes Vaterland (Heyer); Intermezzo, Schmetterling (Schlenk); Potpourri, Was wir lieben (Gangelberger); Waltz, Moss Rose (Bosc); Intermezzo, The Clock is playing (Blaauw); March, Der eiserne Grenadier (Richter). **8.45**, Somersaults of the Age—a Humorous Satirical Radio Sequence, with Readings from Morgenstern, Wedekind, Peter Scher, Gösta Törnequist, and Others. **9.15**, News Bulletin. **9.30**, Concert by the Dresden Chamber Orchestra, conducted by Richard Fricke. Overture, Euristeo (Hasse); Symphony in D Minor and D Major for Strings, Two Oboes, Two Horns, and a Harpsichord (Haydn); Ländliche Serenade for String Orchestra (Gustav Jensen); Romance for Violin and String Orchestra (Henriques); Second Suite in G Minor for Strings and Harpsichord (Telemann); Russian Suite for Violin and String Orchestra (Wüst). **11.0** (approx.), Close Down.

LINZ.—See **Vienna.**

LWOW

381 metres; 16 kW.—**6.5 p.m.**, Miscellaneous Items. **6.20**, Light Music on Gramophone Records. **6.30**, See **Warsaw.** **7.0**, Reading. **7.15**, Concert of Operetta Music, relayed from **Warsaw.** **9.0**, See **Warsaw.** **10.20**, Light Music on Gramophone Records. **10.30** (approx.), Close Down.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—**6.30 p.m.**, See **Strasbourg.** **7.30**, Radio Gazette for Lyons and the South-East. **8.30**, See **Strasbourg.** News after the Relay.

MADRID

ARANJUEZ (EAQ), 30.43 metres; 20 kW.—**10.30 p.m.**, Concert of Popular Music. **10.45**, Radio Chronicle. **11.0**, Concert (contd.). **11.35**, Answers to Correspondence. **11.40**, Light Music. **12 Midnight** (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 424.3 metres; 2 kW.—**7.0 p.m.**, Chimes, Exchange, and Request Gramophone Records. **7.15**, Medical Talk. **7.30**, Talk, followed by Request Gramophone Records. **8.15**, News Bulletin and Political Review. **8.30 to 9.0**, Interval. **9.0**, English Lesson by the Linguaphone Method. **9.30**, Chimes, Time, Political Review, and Extracts from Werther—Opera (Massenet) on Gramophone Records. **11.45**, News Bulletin. **12 Midnight**, Chimes and Close Down.

MALMO.—See **Stockholm.**

MILAN.—See **Turin.**

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—**3.10 p.m.**, Concert by the Station Orchestra, conducted by **J. Plichta.** **4.10**, See **Prague.** **4.50**, See **Brno.** **5.0**, Talk. **5.15**, See **Prague.** **5.25**, See **Brno.** **6.0**, See **Prague.** **8.35**, Zither Solos. **9.0**, See **Prague.** **10.0** (approx.), Close Down.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—**4.0 p.m.**, News. **4.10**, Announcements. **4.25**, Madame Butterfly—Opera in Two Acts (Puccini), relayed from the Branch of the Grand Theatre. **8.0**, Talk in French: How the Face of Russia has been changed through the Revolution. **8.55**, Time. **9.5**, Press Review.

MOTALA.—See **Stockholm.**

MUHLACKER.—See **Stuttgart.**

MUNICH

533 metres; 60 kW. Relayed by **Augsburg** and **Kaiserslautern, 560 metres**; and **Nürnberg, 239 metres.**—**4.0 p.m.**, Concert by the Anny Rosenberger Chamber Quartet: Soloist, Elisabeth van Wien (Folk Songs to the Lute). **5.15** (from **Nürnberg**), Talk on Wilhelm Löhe. **5.35**, Talk: The Carlovingian Empire.—I. **5.55**, Time, Weather, and Agricultural Notes. **6.5**, Talk: German History in the Making. **6.25**, Concert by a Male Voice Choir **6.55**, Humorous Tales. **7.10**, The Valves—a Humorous Radio Potpourri. **8.10**, Talk: Handwriting as a Plastic Exercise. **8.30**, Orchestral Concert, conducted by Erich Kloss: Soloists, Dinah Grohmann (Soprano) and Onavia Causi (Tenor): Prelude to La Traviata (Verdi); Aria from Aïda (Verdi); Ballet Music from Faust (Gounod); Soprano Solos: (a) Aria from Madame Butterfly (Puccini), (b) Aria from Turandot; Waltz from Naïla (Delibes); Tenor Solos: (a) Serenata (Mascagni), (b) La Girometta (Sichella), (c) La Purchella (Tosti); Music from A Midsummer Night's Dream (Mendelssohn). **9.20**, Time, Weather, News and Sports Notes.

NAPLES.—See **Rome.**

NOTODDEN.—See **Oslo.**

OSLO

1,083 metres; 60 kW. Relayed by **Fredrikstad, 365.8 metres; Hamar, 574.7 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres;** and **Rjukan, 447.1 metres.**—**4.0 p.m.**,

Concert by the Grand Hotel Orchestra: Overture, Peter Schmoll (Weber); Waltz, Die ersten Gedanken (Lanner); Selection from The Merry Widow (Lehar); Canto amoroso (Sammartini); Prelude (Svendsen); Czardas, Katinka (Calfot). **5.0,** Talk for Housewives. **5.45,** Songs and Ukelele Music by the Two Jazz Troubadours. **6.0,** Announcements. **6.15,** Weather and News. **6.30,** English Lesson. **7.0,** Time. **7.1,** Talk on the Industrial Revolution. **7.30,** Concert by the Station Orchestra. **8.40,** Weather and News. **9.0,** Topical Talk. **9.15,** Dance Music and Popular Melodies by a Cornet Quartet.

OSTERSUND.—See **Stockholm.**

PALERMO

542 metres; 3 kW.—**7.0 p.m.,** Dopolavoro Notes, Tourist Talk, Agricultural Report, and Giornale Radio. **7.20,** Variety Music. In an interval at **7.30,** Time Signal and Announcements. **7.45,** Mephistopheles—Opera (Boito) on Gramophone Records. In the intervals, Talk and Art Notes. **9.55,** News Bulletin.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW.—Time Signals (on **2,650 metres**) at **9.26 a.m.** and **10.26 p.m.** (Preliminary and 6-dot Signals).—**5.45 p.m.,** Le Journal Parlé. **7.20,** Weather Report. **7.30,** Pianoforte Recital by Marie Antoinette Pradier: Rondos by Marais, Haydn, Mozart, Mendelssohn and Chopin, with Commentary by André Delacour. **8.0,** Concert by the Firmin Touche Quartet; Quartet in B Flat, No. 13 (Beethoven); Elegy for Strings (Glazunov). **9.0** (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—**6.45 p.m.,** Journal Parlé. **7.0,** Sponsored Concert with Gramophone Records. **8.0,** Film Notes. **8.5,** Legal Talk. **8.15,** Interval. **8.30,** Concert of Spanish Music by the Station Symphony Orchestra: Part I (Granados): Prelude; Spanish Dance; Characteristic Dance; Escenas Poéticas; Spanish Caprice; Spanish Piece; Libro de horas; La Maga Doloresa; El Mago discreto; Selection from El Tralala y el Punteando. Part II (Albéniz): Malorca; Granada; Zambra; Granadina; Piezas caracteristicas; Songs of Spain. Part III (Falla); Pana Morumo; Lullaby; Selection from Asturiana; Two Spanish Dances from La vida breve. Part IV (Turina); Symphonic Picture, La procesión del Rocio; Danzas fantásticas; Cuentos de España; El polo; El tomba; Midnight on Maundy Thursday; Under the Orange Tree. **10.30,** News.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—**6.45 a.m.,** Physical Culture. **7.30,** Weather and Physical Culture (contd.). **7.45,** Light Music on Gramophone Records. **8.0,** Press Review and Weather. **12 Noon,** Concert by the Krettly Orchestra: Overture, Le Voyage en Chine (Bazin); Ballet Music from Philémon et Baucis (Gounod); Overture, Le Roi d'Yvetot (Adam); Selection from Cavalleria rusticana (Mascagni); Javotte (Saint-Saëns); Selection from Maruouf (Raband); Selection from Le Bon Roi Dagobert (Rousseau); Ballet Music from Sylvia (Delibes); Persian Dance (Guiraud); Ballet Music from Parysatis (Saint-Saëns); Ballet Music from Les deux Pigeons (Messager). In the interval at **1.0,** Exchange and Weather, and at **1.30,** Exchange. **2.0,** Exchange. **3.45,** Exchange and Market Prices. **4.30,** Elementary English Lesson. **6.10,** Agricultural Talk. **6.30,** Advanced English Lesson. **6.50,** Theatre Review. **7.5,** Talk on Art. **7.20,** Concert by the Krettly Orchestra: Overture, Pique Dame (Suppé); Les Violettes de la Malmaison (Cools); La Plus Belle (Waldteufel); Marche Lilloise (Leduc). **7.45,** Commercial Prices, News, and Review of the British Press. **8.0,** Les Hannetons—Play (Brieux). In the interval at **8.30,** News and Weather, and at **8.40,** Review by Pierre Seize. **9.15,** Press Review and News. **9.30,** Gramophone Records: Jungle Drums (Ketelbey); Song (Spoliansky); Rhythmic Paraphrase on Il Trovatore (Verdi); Lullaby of the Leaves (Young); Melody (Jekyll); Rumba, Jutamento (Matamoro); Waltz from Faust (Gounod); Two Songs (Dalcroze); Potpourri; Selection from Le Jour et la Nuit (Lecocq); Melody (Ray); La Poupée d'Arlequin (Darcy).

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW. Relayed by **W8XK** on **48.86 metres** and **25.27 metres.**—**9.0 p.m.,** Work-a-day Thoughts. **9.5,** Business News. **9.15,** Programme to be announced. **9.30,** Weather Report. **9.31,** Johnny Muskrat. **9.32,** Market Reports. **9.45,** Pianoforte Interlude. **9.50,** David Lawrence Dispatch. **9.55,** KDKA Artist Bulletin. **9.58,** Programme Announcements. **10.0,** Programme to be announced. **10.15 to 11.15, New York** Relay. **10.15,** Adventures of Dr. Dolittle. **10.30,** The Singing Lady. **10.45,** Little Orphan Annie. **11.0,** Our Daily Food, by Maude and Cousin Bill. **11.15,** Time Signal. **11.16,** Weather Report. **11.17,** Teaberry Sport Review. **11.22,** Press News Reeler. **11.27,** Strange Facts. **11.29,** Temperature Report. **11.30,** KDKA Orchestra. **11.45 to 3.0 a.m. (Wednesday), New York** Relay. **11.45,** To-day's News, by Lowell Thomas. **12 Midnight,** Pepsodent Amos 'n' Andy. **12.15 a.m.,** National Advisory Council on Radio in Education—Armaments, by Admiral William Ledyard Rodgers, and Roland S. Morris, former Ambassador to Japan. **12.45,** Westinghouse Programme. **1.0,** Eno Crime Club. **1.30,** Time Signal and Adventures in Health. **1.45,** Phillips Lord in The Country Doctor. **2.0,** Household Musical Memories. **2.30,** Willard Robinson's Deep River Orchestra. **3.0,** The Tune Detective. **3.15,** Westinghouse Pioneers. **3.30,** Ilo May Bailey and Orchestra, from **New York. 3.45,** Bradley Kincaid. **4.0,** Time Signal. **4.1,** Teaberry Sport Review. **4.11,** Temperature Report. **4.12,** Weather Report. **4.13,** KDKA Artist Bulletin. **4.15,** Press Last Minute News Flashes. **4.20,** Henry Halstead and his Californians. **5.0,** Cotton Club Orchestra, from **New York. 5.30,** Time Signal and Goodnight.

PURSGRUND.—See **Oslo.**

PRAGUE

488.6 metres; 120 kW.—**3.10 p.m.,** See **Mcravska-Ostrava. 4.10,** Talk on Industry. **4.20,** Czech Lesson for Germans, and German Lesson for Czechs. **4.50,** Light Music on Gramophone Records. **5.5,** Agricultural Report. **5.15,** Talk for Workers. **5.25,** News in German. **5.30,** German Transmission: Talk by Hedwig Schulhof. **6.0,** Chimes from the Church of St. Loudmila. **6.5,** News. **6.10,** Talk in Russian: Turgeniev. **6.25,** Ivan Olbracht Programme, with Introductory Talk. **6.50,** Orchestral Concert, conducted by Prof. Pavel Dedecek: Overture, Euryanthe (Weber); Suite from A Midsummer Night's Dream (Mendelssohn); Rhapsody in D, Op. 45 (Dvorak); Fantastic Scherzo in G Minor, Op. 25 (Suk). **7.45,** Wireless Talk. **8.0,** Time Signal. **8.2,** Running Commentary on the International Ice Hockey Championship in the Winter Stadium. **8.35,** Sonata for Violin and Pianoforte (Axman) by Ervina Brokessova and Prof. E. Schulhoff. **9.0,** Time Signal. **9.2,** News and Sports Notes. **9.15,** Running Commentary (contd). **10.0** (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; **LAUSANNE, 680 metres;** and **GENEVA, 760 metres.**—**6.30 p.m.** (from **Geneva**), Concert of Newly Released Gramophone Records. **7.0** (from **Geneva**), Talk: The Work of the League of Nations. **7.15** (from **Geneva**), Recital of Mozart and Haydn Trios by the Society for Old Music. **8.0** (from **Geneva**), Madame Sans-Gêne—Comedy in Three Acts (Sardou and Moréan). **9.0,** News and Weather. **9.15** (approx.), Close Down.

RJUKAN.—See **Oslo.**

ROME

Call 1RO, 441 metres; 50 kW. Relayed by **Naples, 319 metres,** and **2RO, 25.4 metres.**—**7.0 a.m.,** Gymnastics. **7.15 to 7.30,** Giornale Radio and Announcements. **11.30,** Weather and Light Music on Gramophone Records. **12 Noon,** Time and Announcements. **12.2 to 1.15 p.m.,** Concert from **Turin.** In the interval from **12.30 to 12.45,** Giornale Radio and Exchange. **3.45,** Children's Radio Review. **4.10,** Announcements. **4.15,** Exchange and Giornale Radio. **4.30 to 5.15,** See **Turin. 6.0 (Neples),** Shipping and Sports Notes. **6.10,** Atmospheric Signals Lesson in Morse. **6.20,** Giornale Radio, Agricultural and Dopolavoro Notes. **7.0,** Time and Announcements. **7.2,** Talk. **7.15,** Light Music on Gramophone Records. **7.30,** Sports Notes and Tourist Report. **7.45,** La città rosa—Operetta in Three Acts (Lombardo and Ranzato). In the intervals: Theatre Talk and Announcements. News after the Operetta.

SALZBURG.—See **Vienna.**

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 379.5 metres; 50 kW. Relayed at intervals by **W2XAF** on **31.48 metres** and by **W2XAD** on **19.56 metres.**—**12 Midnight,** General Electric Programme. **7.15 a.m. (Wednesday),** Stock Report. **12.30 to 3.0, New York** Relay. **12.30,** Soloist. **12.45,** The Goldbergs. **1.0,** Blackstone Plantation. **1.30,** Wayne King's Orchestra. **2.0,** Ben Bernie's Blue Ribbon Orchestra. **2.30,** Ed Wynn and the Fire Chief Band. **3.0,** Lucky Strike Hour, from **New York,** followed by Programme Resumé.

SCHWEIZERISCHER LANDESSENDER

BEROMUNSTER; 459 metres; 60 kW.; **BASLE, 244.1 metres;** and **BERNE, 245.9 metres.**—**11.28 a.m.,** Time Signal from Neuchâtel Observatory. **11.30,** Weather and News. **11.40,** Concert by the Radio Orchestra. **12.35 to 12.45 p.m.,** Weather and Exchange. **2.30,** Concert by the Little Radio Orchestra. **3.0,** Gramophone Concert. Part I—Wagner Programme; Part II—Favourite Overtures. **4.30,** Weather. **4.35 to 5.30,** Interval. **5.30** (from **Berne**), Programme for Young People. **6.0,** Time and Weather. **6.2** (from **Berne**), Notes on the Broadcasts for Schools. **6.15** (from **Berne**), Talk: The Nervous System. **6.45,** Concert by the Radio Orchestra. **7.0** (from **Berne**), Wagner Song Recital by Anny Weber-Brägger (Soprano). **7.15,** Concert by the Radio Orchestra. **7.45** (from **Berne**), 'Cello Recital by Lorenz Lehr; Music by Beethoven, Haydn and Tartini. **8.30,** Weather and News. **8.40,** Franz Schubert Concert by the Radio Orchestra. Soloist: Anny Weber-Brägger (Soprano). **9.15** (approx.), Close Down.

SOTTENS.—See **Radio-Suisse Romande.**

STOCKHOLM

Call SASA, 435 metres; 55 kW. Relayed by **Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,348 metres; Ostersund, 770 metres;** and **Sundsvall, 542 metres.**—**4.5 p.m.,** Accordion Music and Reading, relayed from **Malmö, 231 metres. 4.45,** Popular Music on Gramophone Records. **5.45,** French Lesson. **6.15,** Weather and News. **6.30,** Talk: What is the League of Nations? **7.0,** Concert by the Station Orchestra: Soloist: Sulo Hurstinen (Violin); Suite, Karelia (Sibelius); Concerto for Violin and Chamber Orchestra (Merikanto); Andante cantabile from the Fifth Symphony (Tchaikovsky); Cradle Song (Iljinsky); Barcarolle (Arensky); Spanish Caprice (Rimsky-Korsakov). **8.15,** Talk on Greek Epitaphs. **8.45,** Weather and News. **9.0,** Orchestral Concert: Overture, Prinzess Rosine (Lincke); Ballad and Polonaise (Vieuxtemps); Aquarellen-Walzer (Jos. Strauss); Selection from Carmen (Bizet); Serenade, Invano (Amadei); Melody (Kaper and German); Selection from La belle Hélène (Offenbach). **10.0** (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—**11.30 a.m.,** Gramophone Concert of Light Music. **12.45 p.m.,** News. **1.0,** Time and Exchange. **1.5,** Gramophone Records of Gabriel Pierné as conductor: First Peer Gynt Suite (Grieg); A Midsummer Night's Dream (Mendelssohn); Spanish Rhapsody (Ravel); Bacchanal from Samson and Delilah (Saint-Saëns). **2.0 to 4.45,** Interval. **4.45,** Talk in French: Agriculture and Industry in Madagascar. **5.0,** Orchestral Concert. Conductor and Soloist: M. Roskam ('Cello). March, Abd-el-Kader (Ewrard); Waltz from The Chocolate Soldier (O. Straus); 'Cello Solo: Berceuse (Roskam); Overture, Jean de Paris (Boieldieu); Intermezzo, Parade im Märchenwald (Noack); Selection from Un bon garçon (Yvain); Wedding of the Marionettes (Kockert); Waltz Intermezzo (Percy); Marche printanière (Filipucci). **5.0,** Talk in German. **6.15,** Topical Talk. **6.30,** Orchestral Concert, conducted by Maurice de Villers: Overture, Stradella (Flotow); Selection from La Favorita (Donizetti); Selection, Philémon et Baucis (Gounod); Scènes alsaciennes (Massenet); Marche héroique (Saint-Saëns). **7.30,** Time and News. **7.45,** Orchestral Concert (contd.); Toréador et Andalouse (Rubinstein); Melody (Rubinstein); Orchestral Suite, Mascarade (Lacôme); Selection from The Girl in the Taxi (Gilbert); Czardas (Grossman). **8.25,** Lottery Results. **8.30,** Orchestral and Choral Concert, relayed from the Conservatoire, Metz. Conductor: René Delaunay. Soloist: Jean Meyer (Violin). Overture, Carnival of Venice (Thomas); The Nymphs' Chorus from Psyche (Thomas); Concerto in E Flat for Violin (Mozart); Variations joyeuses (Delaunay); Etudes on The Haunted Palace (Florent Schmitt); Selection from Rannuteho (Pierné); Violin Solos: (a) Piece for Violin (Thiriet), (b) Berceuse (Fauré), (c) Gavotte and Gigue from the Sixth Sonata (Bach); Mixed Choir and Orchestra: Burgundian Songs (Maurice Emmanuel): (a) Chez Jean Nicot, (b) M'y allant promener, (c) La Perdriole. **10.30** (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres, 60 kW.; and **FREIBURG, 570 metres.**—**12.30 p.m.,** Concert from **Langenberg. 1.0,** Sponsored Concert. **1.30 to 2.0,** Advanced English Lesson. **3.0,** Talk: Flowers. **3.30,** Talk for Women. **4.0,** See **Langenberg. 5.15,** Time, Weather, and Market Prices. **5.25,** Talk on Wallenstein. **5.50,** Talk: The Württemberg and Baden Trade Schools. **6.15,** Time and News. **6.30 to 9.20,** See **Frankfurt. 9.20,** Time, News, Weather, Snow Report, and Programme Announcements. **9.45,** Dance Music by the Stuttgart Philharmonic Dance Band. **11.0** (approx.), Close Down.

SUNDSVALL.—See **Stockholm.**

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—**7.0,** Music by an Argentine Orchestra. **7.15,** News and Exchange. **7.25,** Local News. **7.30,** Operatic Melodies. **7.45,** Orchestral Music. **8.0,** Sound Film Melodies. **8.15,** Instrumental Solos. **8.30,** Extract from Les Brigands (Offenbach). **9.0,** Orchestral Concert. **9.30,** Opera Melodies. **9.45,** Instrumental Music. **10.0,** Popular Songs. **10.15,** North African News. **10.30,** Concert for Listeners in Morocco. **11.0,** Operetta Music. **11.15,** Tangos. **11.30,** Programme in English by the I.B.C. Mr. H. K. Hitchcock announcing. Film Choruses; Song of the Dawn; Song of the Drum; Ol' Man River; Song of the Flame; Song of the Vagabonds; The Ranger's Song; You will remember Vienna; March of the Grenadiers. **12 Midnight,** Weather and Announcements. **12. a.m. (Wednesday),** Military Music. **12.15,** Hawaiian Guitar Music. **12.30** (approx.), Close Down.

TRIESTE

247.7 metres; 10 kW.—**4.0 p.m.** till Close Down, See **Turin.**

TRUNDHEIM.—See **Oslo.**

TURIN

273.7 metres; 7 kW. Relayed by **Milan, 331.5 metres; Genoa, 312.8 metres;** and **Florence, 500.8 metres.**—**4.0 p.m.,** Light Music on Gramophone Records. **4.15,** Talk on the History of Art: Decoration of the Baroque Period. **4.30 to 5.15,** Orchestral Concert, conducted by Ugo Tansini: Kermesse flamande (Brusselmans); Selection from I Pagliacci (Leoncavallo); The Hour of Prayer (Pesse); Overture, Il signor Bruschino (Rossini). **5.35,** Giornale Radio, Agricultural and Dopolavoro Notes. **6.0,** Variety Music on Gramophone Records. In the intervals at **6.20,** Giornale Radio, and at **6.30,** Time, Announcements, and Report of the Royal Geographical Society. **7.0,** Giornale Radio, Weather, and Gramophone Records of Light Music. **7.30,** An Operetta in Three Acts (to be announced). In the intervals, Talk, and Notes on Art. Giornale Radio after the Operetta.

VATICAN CITY

19.84 metres (Morning), and **50.26 metres** (Evening); 10 kW.—**10.0 to 10.15 a.m.,** Religious Information in Spanish. **7.0 to 7.15 p.m.,** Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by **Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 245.9 metres;** and **Salzburg, 218.5 metres.**—**4.0 p.m.,** Concert by Charly Gandriot and his Jazz Band, with Song Refrains by Leo Greiner, relayed from the Park Hotel Schönbrunn. **5.15,** Agricultural Talk. **5.40,** Talk: Otto the Great and the Foundation of the German Empire of the Middle Ages. **6.5,** French Lesson. **6.25,** Time, Weather and Programme Announcements. **6.35,** Concert by the Vienna Symphony Orchestra, conducted by Rudolf Nilius. Soloist: Walter Kleinecke ('Cello). Symphonic Fantasia, Op. 16, Aus Italien (Richard Strauss); Rocaco Variations (Tchaikovsky); Overture, The Thieving Magpie (Rossini). **7.55,** South of the Danube—Variety Programme. Part I: Cupolas and Minarets (Erwin Rieger, arr. Dora Miklosich). Part II: Der Gespan von Semberia—One-Act Drama (Roda-Roda), after the Book by Nuschitsch. **8.55,** Time, Weather and Announcements. **9.10,** Variety Concert, relayed from the Oase Restaurant.

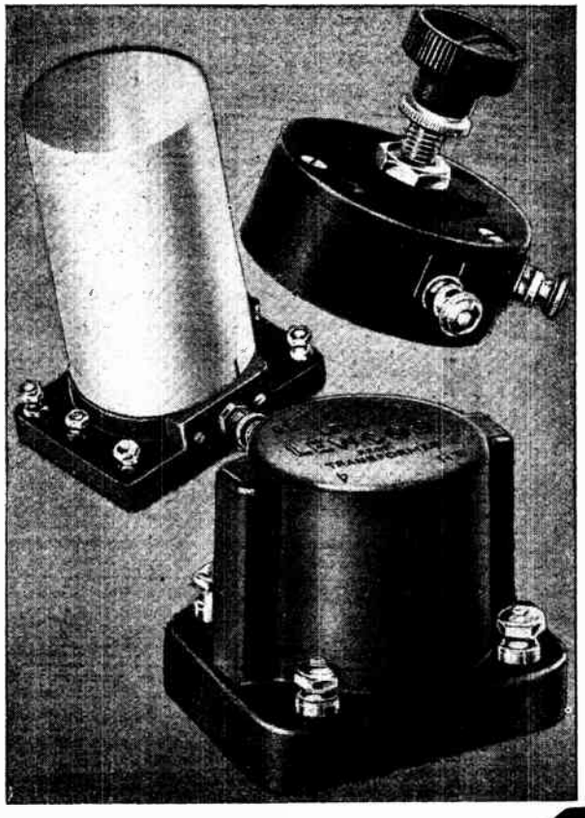
WARSAW

1,411 metres; 120 kW.—**10.58 a.m.,** Time Signal and Bugle Call from the Tower of St. Mary's Church, Cracow. **11.5,** Programme Announcements. **11.10,** Light Music on Gramophone Records. **12.20 p.m.,** Weather Forecast. **12.25 to 2.10,** Interval. **2.10,** Announcements. **2.15,** Economic Notes. **2.25,** Anti-Gas and Aircraft Drill. **2.30,** Announcements. **2.35,** Book Review. **2.50,** Light Music on Gramophone Records. **3.25,** Educational Talk. **3.40,** Talk, relayed from **Cracow (312.8 metres). 4.0,** Concert by the Warsaw Philharmonic Orchestra, conducted by Fitelberg. Suite of Polish Dances (Zarebski-Maklakiewicz); Symphonic Fragment (Brzozowski); Symphonic Triptych (Labunski). In the Interval, Announcements. **4.55,** Programme Announcements. **5.0,** Talk on History: Great Monarchs of the East, relayed from **Wilno (563 metres). 5.20,** Topical News. **5.25,** Light Music, relayed from the Café Gastronomia. **6.0,** Miscellaneous Items. **6.20,** Agricultural Notes. **6.30,** Talk on Music, relayed from **Cracow. 6.45,** Radio Journal. **7.0,** Orchestral Concert of Operetta Music. Conductor: S. Navrot. Soloists: Lozinska (Soprano), and Poplawski (Tenor). Overture (Rapacki); Soprano Solos: Two Airs from Frasquita (Lehar); Czardas from Countess Maritza (Kálmán); Tenor Solo: Air from The Circus Princess (Kálmán); Overture, Gri-Gri (Lincke); Duet, Essai d'amour (Rapacki); Overture, Pique Dame (Suppé); Selection from The Geisha (Jones); Selection from Schön ist die Welt (Lehar); Waltz from The Dollar Princess (Fall); Duet from The Circus Princess (Kálmán); Soprano Aria from The Czarevitch (Lehar); Tenor Aria from The Merry Widow (Lehar); March from Der Teufelsreiter (Kálmán). In the interval, Sports Notes and Police Report. **9.0,** Reading. **9.15,** Dance Music from the Café Italia. **9.55,** Aviation Weather Report and Police Notes. **10.0,** Dance Music from the Bodega Dance Hall.

ZURICH.—See **Schweizerischer Landessender.**

Foreign programmes continued on page XIII.

PROGRAMMES CONTINUED



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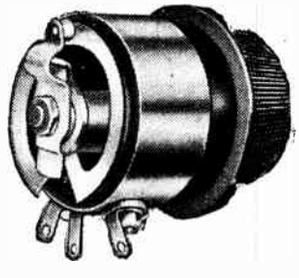

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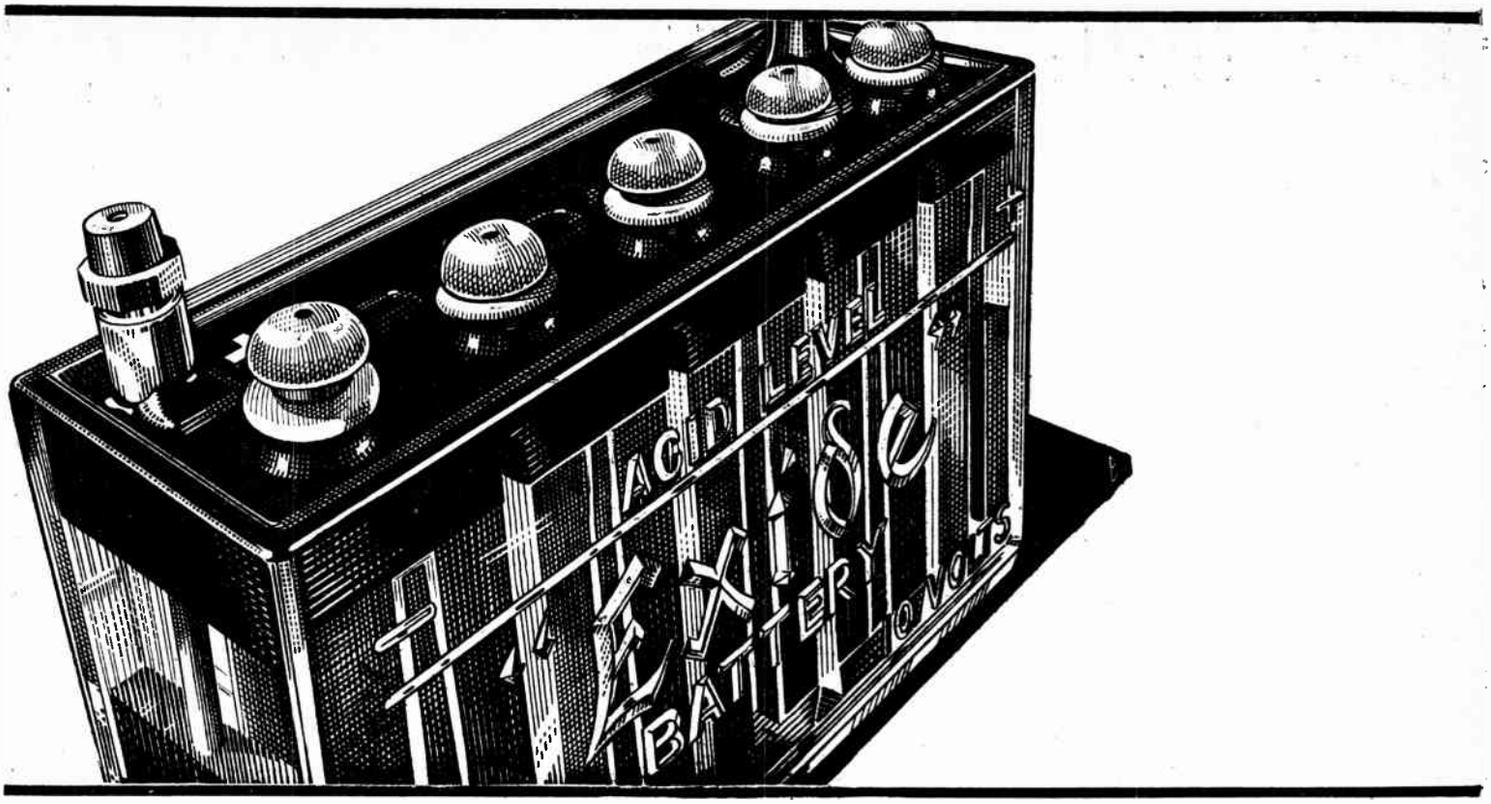

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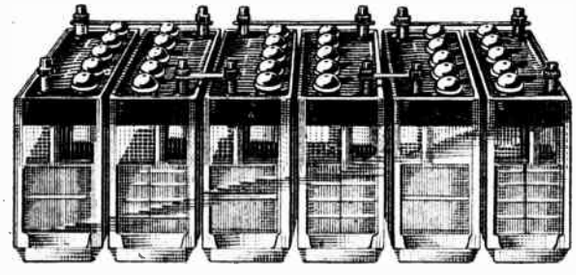

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All parts supplied for any specified set by return.

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Manufacturers and Purveyors of Electric Lamps By Appointment

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"QUIESCENT PUSH-PULL"

—the new principle developed in the Mazda valve laboratories and used for the following "Wireless World" receivers—

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The problem of economically providing a battery operated set with sufficient power to operate a moving coil speaker efficiently has hitherto proved a serious difficulty. The new principle of Quiescent Push-Pull, developed in the Mazda Valve Laboratories, has solved this problem as, by the use of two Mazda Pen 220A's, a power output of as much as 1.3 watts can be obtained with a total H.T. consumption of only 6 m/A at 120 volts.

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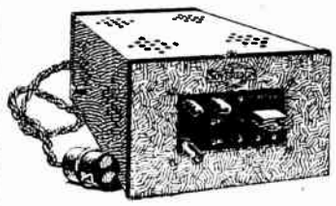

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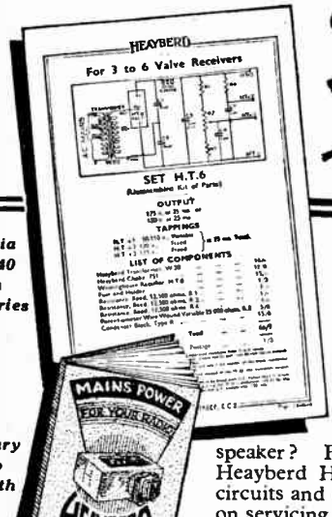

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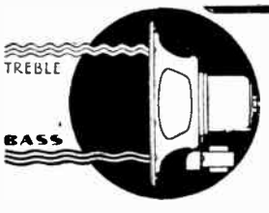

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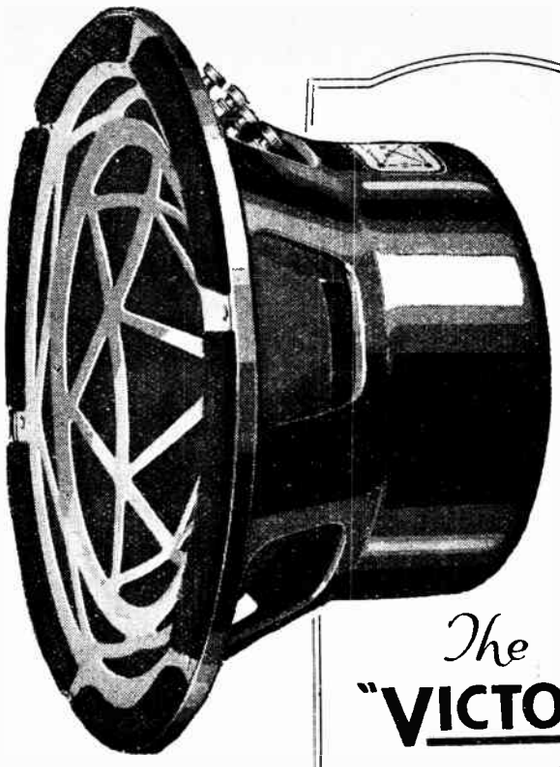

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Includes 6 ratio Ferranti Transformer

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When one hears speech and music re-created by the R. & A. "VICTOR," one is conscious only of the actual performance.

There is neither over-emphasis of certain passages due to cone resonance, nor preponderance of bass, and the distribution of output energy is constant throughout the whole orchestral range.

The result is RE-CREATION, which is more than mere reproduction; the illusion that one is listening to the actual performers.

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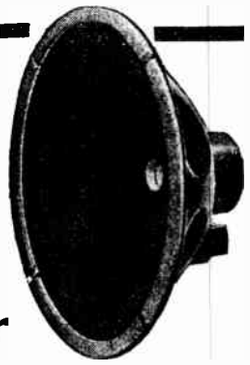

DUAL MATCHED SENIOR UNITS

Recommended for The

Wireless World

"MODERN A.C. QUALITY AMPLIFIER"

In their issue of January 20th, the "Wireless World" after making exhaustive tests of the Sonochorde Senior model moving coil speaker, published the following report:—

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the "Wireless World" have lent emphasis to this report by choosing a pair of Sonochorde Senior D.C. Units for their new

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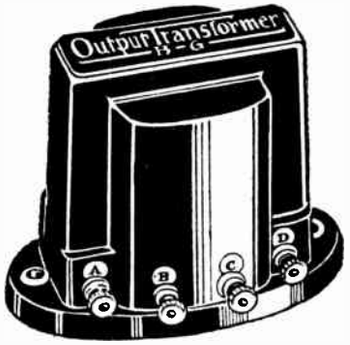
OUTPUT TRANSFORMER



Enables the speaker to be correctly matched to the valve, giving increased volume and better tonal balance. Prevents damage to the loudspeaker due to sudden switching on and off of large currents.

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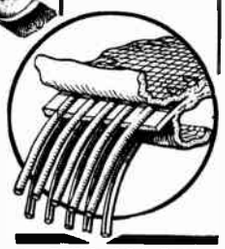

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Lies flat against walls—round door jambs—under lino and carpets. Makes a wonderfully neat and highly efficient job of all interior radio wiring. In a range of colours (Red, Buff and Grey) to tone with your room. From dealers, 30 ft. 3/6, 20 ft. 2/6, 15 ft. 2/-, or send P.O. to

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AND—interesting (fully illustrated) description of entirely new method of wiring and making joints of wonderful efficiency and invisibly neat.

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The **LATEST**

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The Set that is years ahead!

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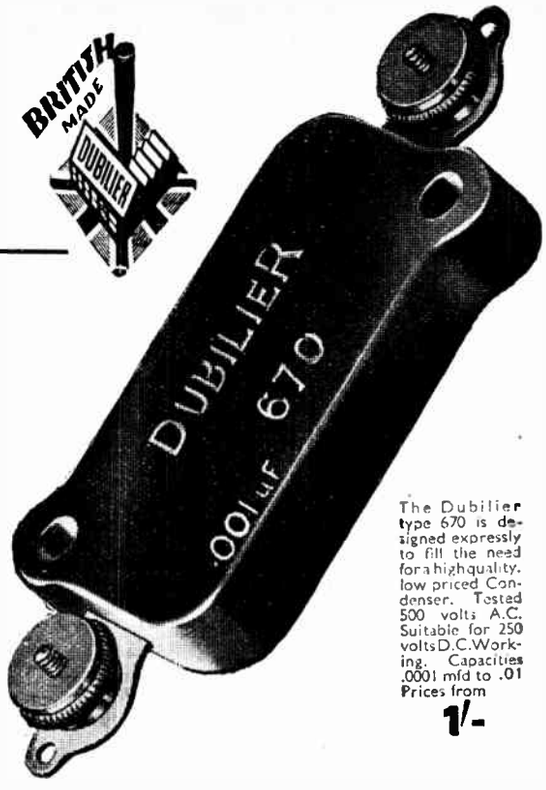

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on every condenser in your set

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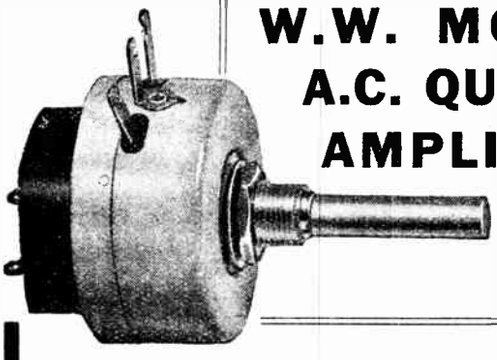
Thoroughly Efficient
COMBINED VOLUME CONTROL & SWITCH

Specified for W.W. MODERN A.C. QUALITY AMPLIFIER



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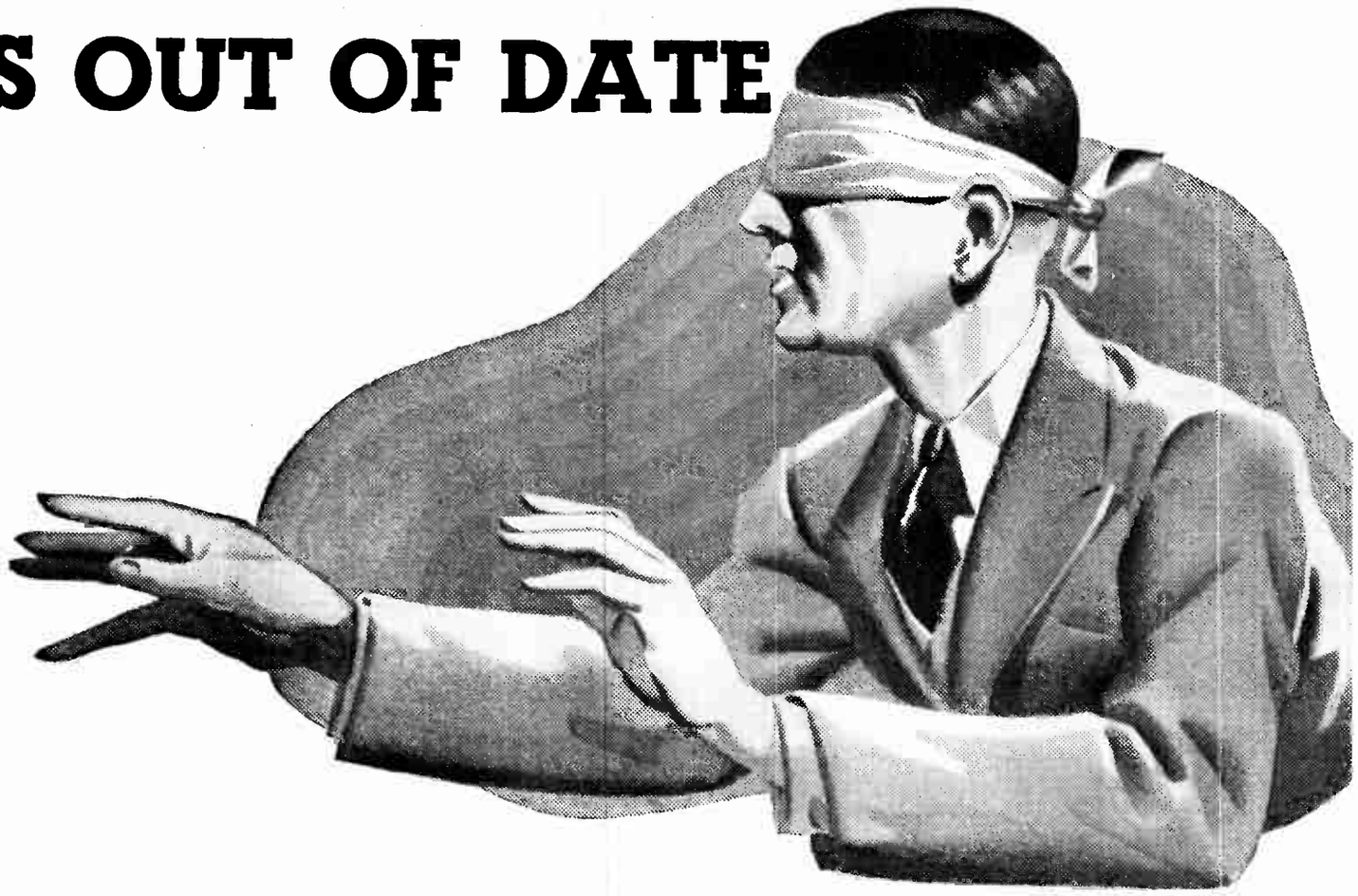
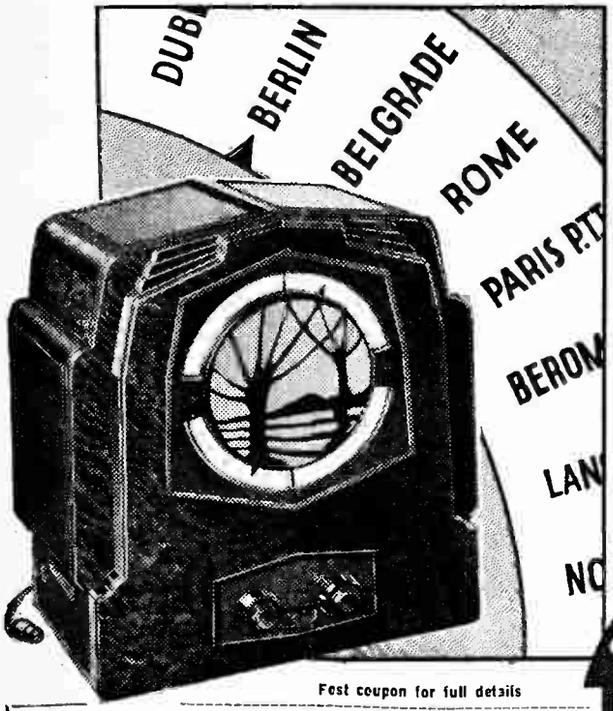


The new EKCO Super-Het. gives you Stations by NAME



Super-Selectivity; Superb Reproduction

Every radio station has a name. You select your programmes by name. Then obviously it is more convenient, more sensible and quicker to tune in by name. The new EKCO Super-Het makes this possible. Its amazing sensitivity gives you all the programmes worth hearing. The remarkable selectivity of its seven tuned circuits enables us to show the names of all the principal home and continental stations on the large dial so that all you have to do is to turn a single knob until the pointer moves to the name of the station you want.

Ask your radio dealer for a demonstration of the EKCO Super-Het in your home.

For A.C. and D.C. Mains

Model S. H. 25 Price 24 gns.

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Special Features: 1. Patented 5-valve Super-Heterodyne Circuit embodying seven tuned circuits and with single knob control. 2. Latest type moving-coil speaker giving superb reproduction. 3. Westinghouse Permanent Metal Rectification. 4. Can be used without aerial or earth if desired. 5. Connections for gramophone Pick-Up and additional speaker. 6. Bakelite cabinet of handsome appearance and extreme durability.

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Please send me FREE illustrated literature of Ekco All-Electric Radio.

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The Wireless World

THE PRACTICAL RADIO JOURNAL

22nd Year of Publication

No. 703. FRIDAY, FEBRUARY 17TH, 1933. VOL. XXXII. No. 7.

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As many of the circuits and apparatus described in these pages are covered by patents, readers are advised, before making use of them, to satisfy themselves that they would not be infringing patents.

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EDITORIAL COMMENT

Headlines for the B.B.C.

Wake Up the Announcers!

IF we opened our daily paper one morning and found no headlines to any article and the same size type throughout, we should undoubtedly regard it as dull in appearance and be annoyed at the difficulty we should experience in sorting out news or items of importance from what was trivial in character.

In the case of broadcasting, it is upon the announcers that the responsibility devolves for presenting the news or prefacing the various features of the programme, and whilst we should not like the announcements to be exaggerated in character, yet we heartily deplore the present monotonous manner in which both news and announcements are given out. If the announcer is so overworked that he is too tired to put any enthusiasm into his introductions, then, naturally, he must have our sympathy, but we suspect that it is not the fault of announcers individually but a part of their training that they should make their announcements in this mechanical fashion. Last week when in the news we were informed of the magnificent achievement of the R.A.F. flyers in breaking the distance record in their flight to the Cape, the announcer's delivery was so sad and monotonous that we could be excused for fearing, at first, that the flyers had met with disaster instead of success. Surely it was an occasion when the B.B.C. could have put a headline into the news and the announcer have let himself go with a little enthusiasm over so magnificent an achievement.

This general monotony in announcements pervades the whole of the programmes of the B.B.C., and we feel strongly that however desirable the B.B.C. may feel it to be to take precautions to suppress irresponsibility on the part of announcers, yet something should be done to eliminate the "weariness" from the announcers' tones and an effort made to put headlines of bold type in their proper perspective in the prefaces to the news and programme items.

Inter-Nation Broadcasts

Success of an Initial Effort

WE congratulate the B.B.C. and the N.B.C. of America on the enterprise shown in organising the successful debate last Saturday between Yale and Cambridge on the subject of War Debts and Reparations.

The idea of this debate fits in admirably with the suggestions put forward by us in a Leader included in our issue of February 10th. In the case, however, of this debate a common language was employed. Our suggestions included talks in English from Continental stations and from the British stations in Continental languages.

Those who may have listened last week to the broadcast of a speech by Herr Hitler must have been impressed with the interest that this speech would have aroused amongst English listeners if it had been more generally understood.

What is needed in Europe to-day is for nations to understand each other's peculiar aspirations and ideals and to have some appreciation of individual national problems, in order to be sympathetic and understanding when these problems are discussed. We do not believe that the ordinary channels of communication can be as effective in achieving this result as broadcast talks, and it is for this reason that we hope the interest in the debate on war debts will encourage the B.B.C. to further efforts.

The MODERN A.C. QUALITY AMPLIFIER

A Self-contained Gramophone Equipment giving 5 to 6 watts Undistorted Output

By W. I. G. PAGE, B.Sc.

FEATURES:

The equipment comprises a two-stage amplifier housed in a cabinet containing a synchronous gramophone motor, turntable and pick-up. The L.F. intervalve coupling consists of a transformer with continuously variable tone control. To safeguard condensers and to economise in equipment a vacuum thermal delay switch is incorporated and instability is guarded against by thorough decoupling. There is provision in the smoothing circuit for energising two loud speaker fields so that dual compensated units can be used. If desired, a record changer can take the place of the synchronous motor.

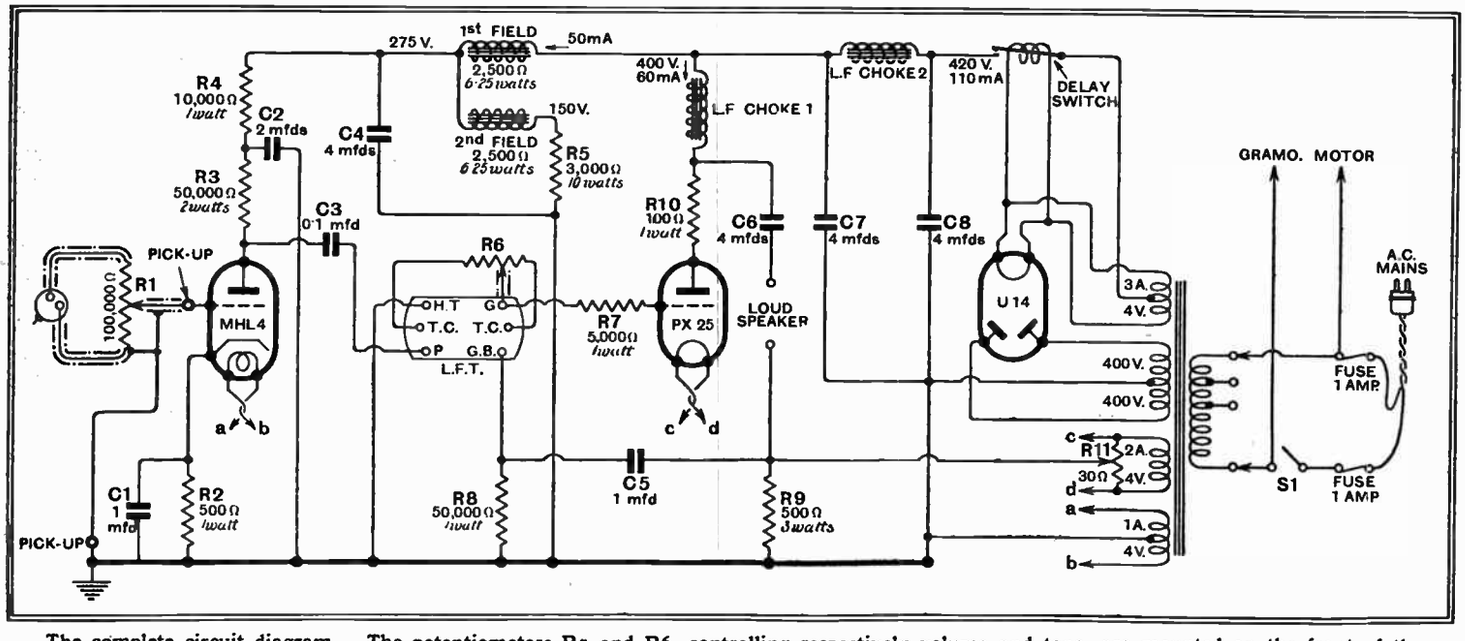
TO people who have grown up with the gramophone and have heard it through the vicissitudes and paroxysms of earlier years, it may be difficult to realise how nearly perfection has been reached in the modern electric reproduction. To the advantages of electrical recording are added those of the modern electric amplifier, an example of which it is the purpose of this article to describe. It can be seriously argued that the time has now come when a good gramophone amplifier with generous power output can be more satisfying than a small amateur orchestra.

In the Modern A.C. Quality Amplifier no pains have been spared to secure a faithful rendering of the original, and a flexibility of control has been arranged to suit the different character of the records played and the varying tastes of a large audience.

It is through the introduction of the 25-watt output valve, giving 5 to 6 watts speech, that the construction of an ambitious amplifier delivering "Public address" volume comes within the scope of the amateur. Little deviation from the conventional layout used for much smaller amplifiers need be made. There is, however, the question of ventilation, as the heat developed by the large output and rectifying valves is liable in a self-contained gramophone equipment to dry the bearings of the electric motor and to cause the woodwork to warp. Free circulation of air round the valves is assured in the amplifier being described by a curved metal cowl from which convection currents are diverted through the metal grille at the back of the cabinet; furthermore, the base of the cabinet and the baseboard and battens of the chassis have a number of large holes drilled in them.

The amplifier equipment, which is transportable, will, when working at full volume level, be capable of entertaining quite 300 people in a concert hall or of providing music for 200 people dancing; on the other hand, it can be tamed to give less than 1 watt (A.C.) if an occasion arises to use it in an ordinary living room.

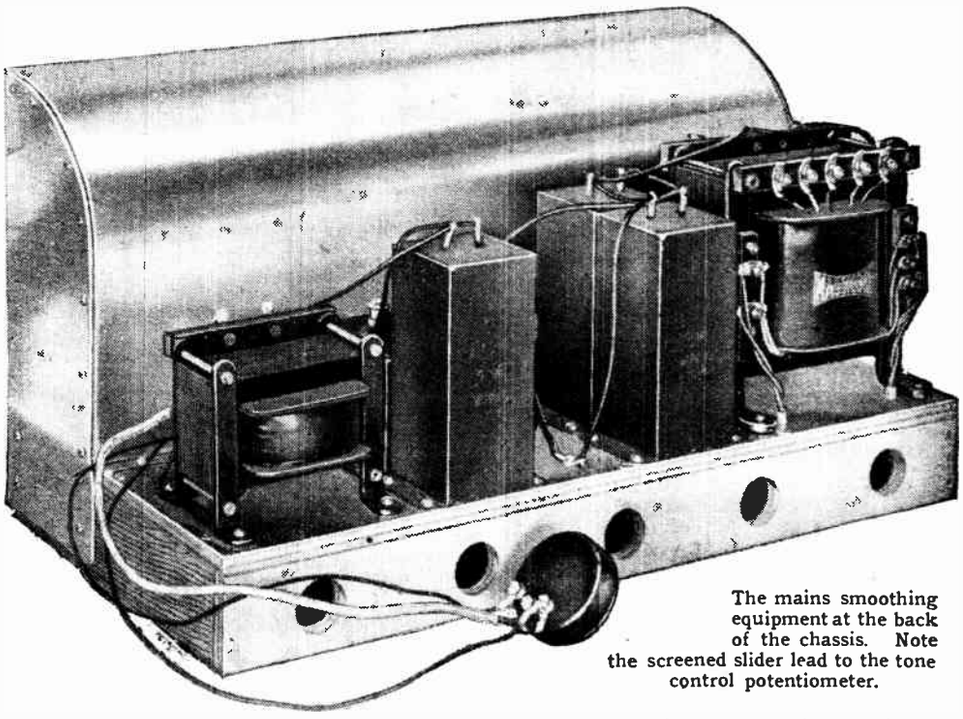
The amplifier is built on a metal-covered baseboard measuring 18 ins. by



The complete circuit diagram. The potentiometers R1 and R6, controlling respectively volume and tone, are mounted on the front of the motor board to the right and left of the turntable. The switch S1 is integral with the potentiometer R1.

The Modern A.C. Quality Amplifier—

9 ins. by ⅜ ins. standing on four battens each 1¾ ins. deep. The chassis is housed in the base of a large cabinet, the upper compartment of which forms the motor board, and to this is attached the B.T.-H. "Truspeed" synchronous motor, the Marconiphone pick-up, and the two control potentiometers. A lid of substantial proportions is provided so that, when closed, needle chatter cannot be heard during the playing of a record. Looking at the front of the unit the left-hand potentiometer controls the tone—the intervalve coupling being effected by a Multitone transformer with centre-tapped windings, while the right-hand control shunted across the pick-up adjusts volume, and when rotated to its extreme anti-clockwise position, open-circuits the mains input, cutting off both the amplifier and the motor.



The mains smoothing equipment at the back of the chassis. Note the screened slider lead to the tone control potentiometer.

Dual Speakers

It is felt that with an amplifier having such a large output the speaker or speakers (if two be employed) should not be built-in to the cabinet, and their location should be left to the discretion of the constructor. It is often an advantage to have baffles mounted in the corner of a hall near the ceiling; especially is this the case when music is required for dancing. There are undoubted advantages in using dual speakers, where the output is over, say, 3 or 4 watts, for not only is the volume level increased, but a better frequency response is obtained and the bass is especially well rendered. Bearing this in mind, the smoothing equipment of the amplifier has been designed to include two loud speaker field windings in series, each of 2,500 ohms D.C. resistance, and as the voltage distribution scheme allows 50 mA. to flow through them—an adequate dissipation of 6.25 watts is obtained in each.

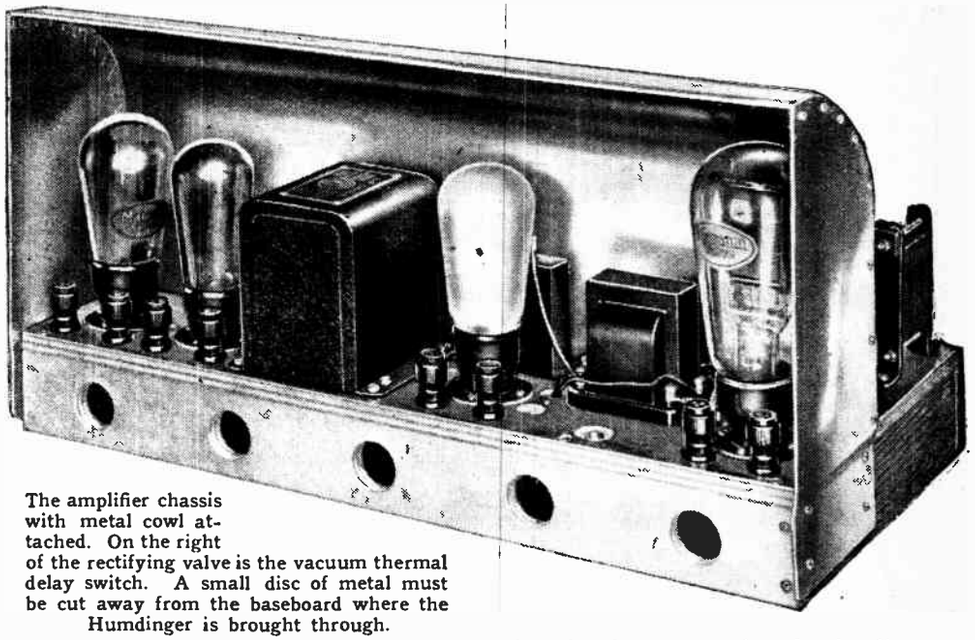
Dual speakers, which must be mounted close together on a baffle of reasonably large area, are generally fed from one output transformer mounted on the baffle or on one of the speakers; it is therefore necessary to take only a single pair of leads for speech currents, but each field requires a pair of leads, accounting for a total of six wires between amplifier and speaker unit. No instability or hum was produced when these leads, as twisted pairs, were run a few inches apart for a distance of 25 to 30 feet.

From the circuit diagram it will be seen that there is applied to the output valve a little less than 400 volts, although the first valve does not really need much over 120 volts H.T. to accommodate the output of the Marconiphone pick-up. Unless certain expedients are resorted to, this disparity of voltage requirements will force the designer to include high-voltage condensers in that part of the set associated with the first valve. These condensers will have to carry with safety the high voltage applied during the 25 seconds while the heater of the indirectly heated valve is warming up.

Quite a large number of condensers are involved, and to avoid heavy cost, and, incidentally, considerable extra baseboard space, either a separate low-voltage rectifier must be used for the first valve or a thermal-delay switch interposed in the main positive H.T. lead. The second of these has been considered the most practicable, and the Ediswan vacuum switch—type D.L.S.I.—has been chosen. This component resembles a valve and consists of a bi-metal contact strip assembly mounted in a glass bulb with a 4-pin base, and connections must be made so that the input is joined to the grid pin and the output to the anode pin. The time delay can be varied by change of heater temperature, but with four volts, contact is made after 30 seconds, which is entirely satisfactory. The heater consumption under these conditions is 0.5 ampere.

Voltage Distribution

The general circuit is quite straightforward and components having a large margin of safety have been chosen. The mains are led to an adaptor unit screwed to the inside wall of the cabinet. Two 1-ampere fuses are included here, and connection is then made via the switch S.1 (integral with R1) to the motor and the primary of the mains transformer. The latter has an incremental tapping of 10 volts so that all voltages between 200 and 250 can be accommodated. The general D.C. voltage and current distribution is shown on the circuit diagram. With a load of 60 mA. for the output valve and 50 mA. for the speaker fields together with R5, an initial unsmoothed voltage of 420 is found across C8. The main smoothing choke drops about 20



The amplifier chassis with metal cowl attached. On the right of the rectifying valve is the vacuum thermal delay switch. A small disc of metal must be cut away from the baseboard where the Humdinger is brought through.

The Modern A.C. Quality Amplifier—

volts, leaving 400 volts to feed the anode circuit of the PX25 and the two speaker fields. Each field causes a drop of 125 volts, so 150 volts is left to be absorbed in the resistance R5. No account has been taken of the small current passed by the MHL4 valve as this forms a negligible part of the total.

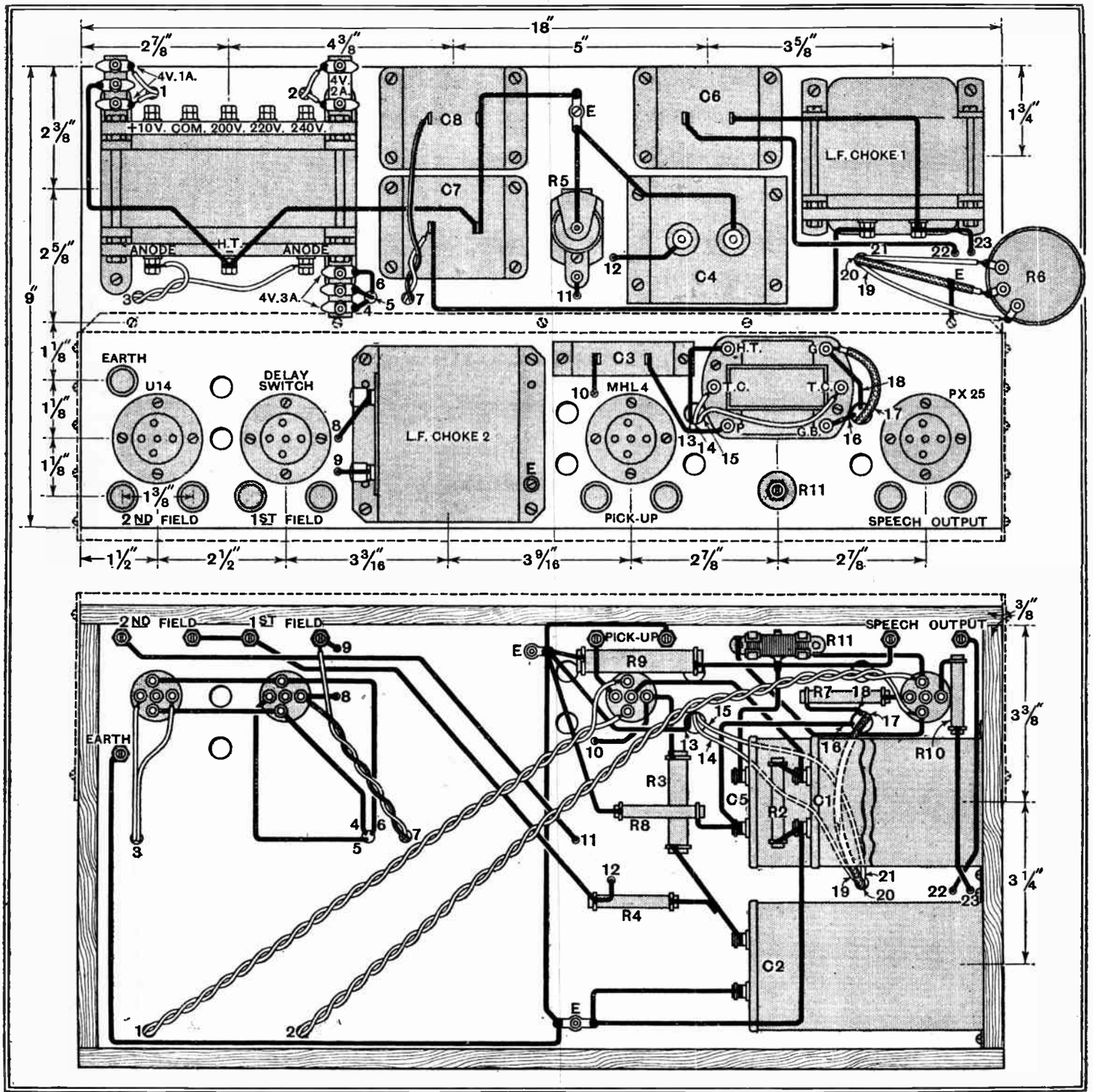
Separate heater windings for the two valves have been arranged on the mains transformer so as to facilitate automatic bias. To the grid and anode terminals of the output valve holder are connected anti-parasitic oscillation resistances R7 and R10, which prevent unwanted high-frequency disturbances. The grid circuit is decoupled by R8 C5 and automatic bias is provided by the 3-watt resistance R9. An intervalve transformer with a continuously variable tone control potentiometer (R6) has been chosen, as it is found that by its use the output can be adjusted to suit various acoustic surroundings. Sometimes speech is more natural if the tone is raised above the level found best for music, and there are some records with which it is a great advantage to bring up the bass register. The curves reproduced show the response (1) when the potentiometer is turned to the extreme bass position; (2) the midway position, and (3) full treble response. The voltage amplification on the vertical scale is that given by an MHL4 valve working into a load of 50,000 ohms. Although parallel-fed, the transformer is not auto-coupled, thus grid decoupling of the succeeding valve is fully effective.

Little need be said of the input circuit and valve. Anode decoupling is given by

BLUE PRINTS

For the convenience of readers constructing this Amplifier, full-sized blue prints of the complete layout and wiring diagram are available from the publishers at 1s. 6d. post free.

PRACTICAL WIRING PLAN AND DIMENSIONAL DATA



The volume control and mains on-off switch are mounted on the motor board and are not shown.

The Modern A.C. Quality Amplifier—

R4 C2, and adequate protection from electrostatic pick-up is afforded by earthing the motor and using earthed screened leads for the sliders of R6 and R1, the metal braiding of the lead in the latter case being used for the pick-up return circuit. The connections for the pick-up terminals mounted on the baseboard of the amplifier should be clear from the circuit diagram. The bias resistance R2 of 500 ohms will generally be found of sufficiently high value, but with pick-ups having an exceptionally large peak output, a value of 1,000 ohms may be necessary.

The gramophone motor chosen is of the synchronous type and is self-starting, and the correct speed is maintained exactly if the mains are frequency-controlled. An adjustable automatic stop is provided, which is found to give consistent and positive operation with the different types of run-off groove. The distance between the lid of the cabinet and the motor board, also the clearance above the cowl in the amplifier, have been made large enough to accommodate a Garrard record changer which has a permanent pick-up.

LIST OF PARTS REQUIRED

After the particular make of component used in the original model, suitable alternative products are given in some instances

1 Mains transformer, 400-0-400 v. 4 volts 3 amps, centre tapped; 4 volts 2 amps; 4 volts 1 amp., centre tapped. (R.I., Sound Sales, Varley, Vortexion, Trix) **Savage type M.G.A.**

1 Output choke, LFC1 (R.I., Sound Sales, Varley, Trix) **Savage "Massicore" type L.34**

1 L.F. choke, 28/14 henrys, **LFC2** (Varley, Trix) **R.I. type DY.11**

1 L.F. transformer, 4:1, **LFT** **Multitone "Toco"**

1 Graded potentiometer for above, **R6** **Multitone**

1 Combined potentiometer, 100,000 ohms and mains "on-off" switch, **R1, S1** (Bulgin, Claude Lyons, Rotorohm, Lewcos, Watmel, Wearite) **British Radiophone type 484**

1 Power resistance, 3,000 ohms, 10 watts, **R5** and holder **Varley C.P.39**

1 Resistance, 100 ohms, 1 watt, **R10** **Claude Lyons**
1 Resistance, 500 ohms, 1 watt, **R2** **Claude Lyons**
1 Resistance, 5,000 ohms, 1 watt, **R7** **Claude Lyons**
1 Resistance, 10,000 ohms, 1 watt, **R.4** **Claude Lyons**
1 Resistance, 50,000 ohms, 2 watts, **R3** **Claude Lyons**
1 Resistance, 500 ohms, 3 watts, **R9** (Dubilier, Erie) **Claude Lyons**

1 Potentiometer, 30 ohms, **R11** **Claude Lyons "Humdinger"**

4 Valve holders, 5-pin (Bulgin, Eddystone, W.B.) **Clix chassis mounting type**

2 Fixed condensers, 1 mfd., 250 volts D.C. working, **C1, C5** **Dubilier type B.S.**

1 Fixed condenser, 2 mfds., 250 volts D.C. working, **C2** **Dubilier type B.S.**

1 Fixed condenser, 4 mfds., 350 volts D.C. working, **C4** (Peak, T.C.C.) **Dubilier type L.S.B.**

3 Fixed condensers, 4 mfds., 500 volts D.C. working, **C6, C7, C8** **T.C.C. type 95**

1 Fixed condenser, 0.1 mfd., 350 volts D.C. working, **C3** (Dubilier, Peak) **T.C.C. type 84**

1 Combined twin fuse holder and Mains Connector, complete with two 1-amp. fuses **Bulgin type F.15**

9 Ebonite shrouded terminals, Earth, 3 L.S.+, 3 L.S.−, 2 Pick-up (Burton, Clix, Eelex, Igranic) **Belling-Lee type "B"**

1 Plymax baseboard, 18×9×¾in. **Peto-Scott**

2 Battens, drilled, 18×1¼in. **Peto-Scott**
2 Battens, 8¼×1¼in. **Peto-Scott**

1 Metal cowl **Peto-Scott**

1 Gramophone motor unit **B.T.H. "Truspeed"**

1 Pick-up **Marconiphone K17**

Cabinet, 19×15×14¾in. **Peto-Scott**

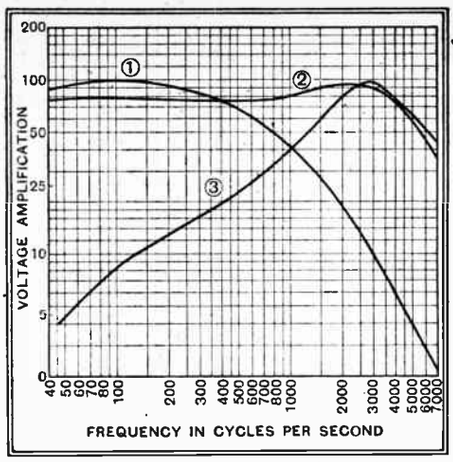
2 lengths Screened sleeving (Harbros, Lewcos) **Coltone**

8 lengths Systoflex, flex, etc.

1 Vacuum thermal delay switch **Ediswan D.L.S.1**

Screws: 22 ¾in. No. 4 R/hd.; 22 ¾in. No. 6 R/hd.; 8 ½in. No. 6 R/hd.; 6 ¾in. No. 4 R/hd.; 2 ½in. No. 6B.A.

Valves: 1 Marconi or Osram MHL4 metallised, or Mazda AC/HL or Cossor 41MHL, 1 Marconi or Osram PX25 or Mazda PP5/400, 1 Marconi or Osram U.14 or Mazda UU.120/500 or Cossor 460BU.



Frequency response curves of the Multitone 1 to 4 L.F. transformer. When the tone control potentiometer is turned to either extreme treble or bass, the response is given by curves 3 and 1 and an intermediate position is represented by curve 2.

The Marconiphone pick-up must be properly tracked, and the arc formed by the needle point when the tone arm is swung over the record should cut the centre of the turntable spindle.

When dual speakers are used it is important to "phase" them correctly—that is, each speech coil should be pushing and pulling simultaneously. If a wrong connection is suspected—and it will be accompanied by loss of bass and the existence of "dead" spots some yards from the speakers—it is only necessary to reverse the leads to one speech coil. If only one speaker is used the terminals for the second field (next to R5) should be bridged by a 10-watt resistance of 2,500 ohms. Suitable dual speakers to handle up to 6 watts speech are the Sonochorde Senior Dual SR.2500; Rola Type F7M.2500 plus F62500, with OOB transformer; Magnavox type Magna DC142/144, 2500 fields plus 20500 transformer; Baker Elomag Dual (2500) and Celestion DS.28 or 88.

If reference is made to the drawings and photographs no difficulty in construction should present itself. It cannot be emphasised too strongly how important are the various earth connections to the metal covering of the baseboard. Aluminium oxidises very quickly, and unless a really tight joint is made there may be intermittent contact. It is as well to earth the amplifier, using the terminal provided.

When the building of the equipment has been completed, and the various speaker connections arranged, the only adjustments to be made (apart from the controls of tone and volume) are the "Humdinger" (R11), the automatic motor stop, the phasing of the speakers, and the correct connections on the primary of the mains transformer, remembering the 10-volt tapping if the supply is 210, 230, or 250 volts.

A gramophone equipment built to this design is available for inspection at 116/117, Fleet Street, London, E.C.4

DISTANT RECEPTION NOTES

READERS have possibly discovered for themselves that at long last the new Athlone transmitter is regularly at work. On the first night of the station's official career the quality did not appear to be too good, but this will no doubt be improved later. Trouble, though, may be experienced from Rabat, whose separation from Athlone is only 3.4 kilocycles. The Moroccan station is now using a power of 5 kilowatts, and comes through very strongly at times when Dublin is silent.

Marseilles appears to have been testing recently with greatly increased power. This station is credited officially with 1.6 kilowatts, but on several occasions lately it has been as strongly received as the 13-kilowatt Bordeaux. The French regional scheme worked out by General Ferrié is still hanging fire, for since there have been twenty-seven French Governments in the last few years, it has been impossible to find time to pass the necessary Bill. When the scheme is complete there will be a chain of some fourteen Government stations, most of them rated at 60 kilowatts. No place in France will be outside the service area of one or more of these stations.

It was announced a short time ago that a decree had been issued providing for the Government control of all transmitting stations, including those operated by private concerns and by amateurs. It is to be hoped that this marks the beginning of a new era in which some stations, such as Radio LL will cease to cause chaos by thrusting in upon unauthorised wavelengths (Radio LL is separated by only 4.5 kilocycles from Hamburg, on the one side, and Seville Union Radio, on the other), whilst others in the lower part of the medium waveband will no longer wander with equally disastrous results from wavelength to wavelength as inclination takes them.

As the programme pages of *The Wireless World* show, the two Brussels stations are now giving us a welcome extension of programme hours at the week-ends. On Sundays both come into action at 10 a.m. instead of 12 noon, and both on Saturdays and Sundays the evening programme continues until midnight. It is understood that the lengthening of the programme hours is made possible by increased receipts from licence fees. These stations are so well received in this country, both in daylight and after dark, that we may almost count ourselves as being within their service area.

Reception of European stations continues to be remarkably good. On the long waves Huizen has shown occasional weakness, but as a rule this station can be heard well at any time when it is in operation. Warsaw's transmissions come through with immense strength. Kalundborg can be received with good volume and quality on most days, but occasionally there is interference from Morse signals.

Amongst the medium-wave stations heterodyne interference is rather more troublesome than it was a week or two ago, many stations suffering from it at times. Those which have been worst affected are Vienna, Beromünster, Paris Ecole Supérieure, Milan, Heilsberg, Turin, and Fécamp. Outstanding medium-wave stations at present are Hilversum, Bordeaux Lafayette, Breslau, Strasbourg, Lwow, Toulouse Midi, Leipzig, Katowice, Rome, Langenberg, Prague, and Budapest.

D. EXER.

Practical HINTS AND TIPS

AIDS TO BETTER RECEPTION

BY the exercise of a little ingenuity the amateur will often find it possible to make use of components which are not precisely in accordance with the specification laid down for the particular circuit on which he is working. A case in point is the use of fixed condensers in positions where the D.C. potential which they will be called upon to withstand is higher than the maker's rated working voltage.

Condensers in Series

By wiring two low-voltage condensers in series, the voltage existing across the circuit can be divided between them, and so they may be usable with safety. But, since the total effective capacity of two condensers in series cannot be as high as the actual value of the smaller, it will not as a rule be economical to use them in this way unless both are of equal capacity; the resultant value will then be half that of either condenser.

It is the purpose of this note to draw attention to a point of considerable importance, which may easily be overlooked when putting this scheme into operation.

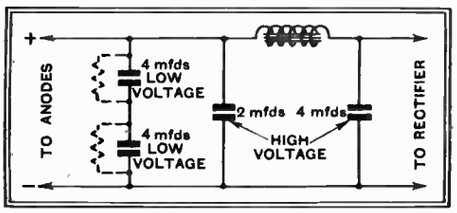


Fig. 1.—A practical case where low-voltage condensers in series may be used in a high-voltage circuit. Protective resistances, shown in dotted lines, ensure that the applied voltage shall be equally distributed.

Although the two condensers in a series combination may be of equal capacity, and have the same rated working voltage, there is no guarantee that their insulation resistance will be similar. Now the proportion of the total voltage developed across each condenser will depend upon the relative values of their insulation resistance. In fact, the two condensers form a potential divider, along which the leakage current creates voltages in proportion to the resistance.

It is a fact that the insulation resistance of nominally similar condensers can differ very considerably indeed. In order to equalise the voltages across series-connected condensers it is necessary to establish a stable potential at the junction between them, which shall be independent of the leakage current. This can be done by connecting two resistances of the same value, one in parallel with each of the condensers. It is necessary that these resistances should pass sufficient current to swamp the leakage current of the condensers without imposing too much additional load on the power supply system. In normal cases resistances of 1 megohm will be found suitable.

OF all the modern refinements that may be added to a long-range receiver of the more ambitious type there is surely nothing more desirable than an automatic volume control system. Various methods whereby a sensibly constant volume may be maintained, more or less independently of the strength of incoming signals, have recently been described in this journal.

Step by Step

Many readers who are planning new sets will probably consider it essential to include automatic volume control as an integral part of the design. At the present stage of development it would perhaps be better to make provision for this addition, but to wire and test the set without it. Then, when all initial adjustments have been made and everything is working properly, the extra apparatus may be fitted and wired.

Those without previous experience of automatic volume control may excusably be puzzled by some of the effects that it introduces. In the event of a fault existing in the receiver these effects will complicate matters, and render difficult the tracing of even a minor defect. When it can be assumed that the set itself is beyond suspicion the fitting and adjusting of the control system is relatively simple.

IN many receiver designs it is usual to depend on the mounting of the ganged tuning condenser as an electrical connection for the various circuits which are controlled by the condenser. For instance, this applies to the "A.C. Monodial Superhet.," and it has been found that even a slightly imperfect connection at this point has serious results. Among other manifestations, it introduces instability, because the resistance of the bad connection is common to several circuits.

Chassis Connections

Accordingly, care should be taken with the mounting, both from the mechanical and electrical point of view. When an aluminium chassis is employed it should be remembered that a film of insulating oxide tends to form on this metal, and so especial pains should be taken to see that any electrical connection is firmly made. In cases of doubt it is wise to supplement the mechanical mounting by an extra electrical connection made to any convenient earthed point from the condenser frame.

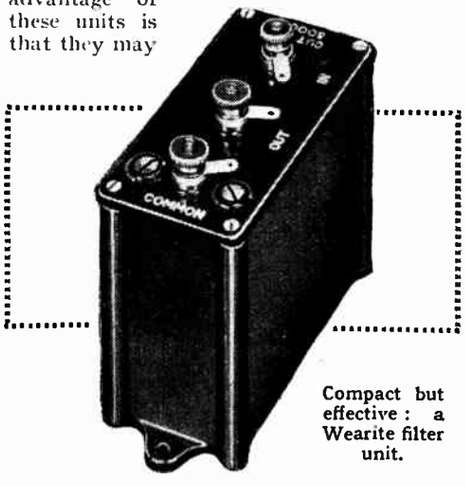
IT is worth while to point out that no system has ever been devised whereby the ganged tuning system of a receiver may be maintained in perfect alignment, irrespective of the capacity of the aerial with which the set is used. This is perhaps rather an academic than a practical point, as with most present-day designs imperfections in input circuit tuning, introduced by quite considerable changes in aerial capacity, are difficult to detect.

Aerial Capacity

Still, it should be borne in mind, especially when the aerial is of non-standard dimensions, or when it appears that for any reason it may have a larger or smaller capacity than usual, that the ganging of a factory-built receiver may be out of alignment. Accordingly, the trimmer of the input circuit (that which controls the tuned circuit in direct association with the aerial) may possibly be adjusted with advantage.

Wearite Whistle Suppressors

WEARITE Heterodyne Filters, specimens of which have been submitted for test, are intended primarily for connection across a loud speaker; two types are available, one removing all frequencies over 3,500 cycles, and the second over 5,000 cycles. The first is more obviously effective in suppressing the great majority of interfering whistles, but it cuts rather too deeply into the musical scale for some tastes. The second filter is especially recommended for high-quality sets, but in any case the great advantage of these units is that they may be easily disconnected when interference is not present.



Compact but effective: a Wearite filter unit.

Both models cost 10s. 6d. each; they were found to perform the function for which they are designed in an unexceptionable manner, especially with a high-impedance pentode output circuit. The makers are Wright and Weaire, Ltd., 740, High Road, Tottenham, London, N.17.

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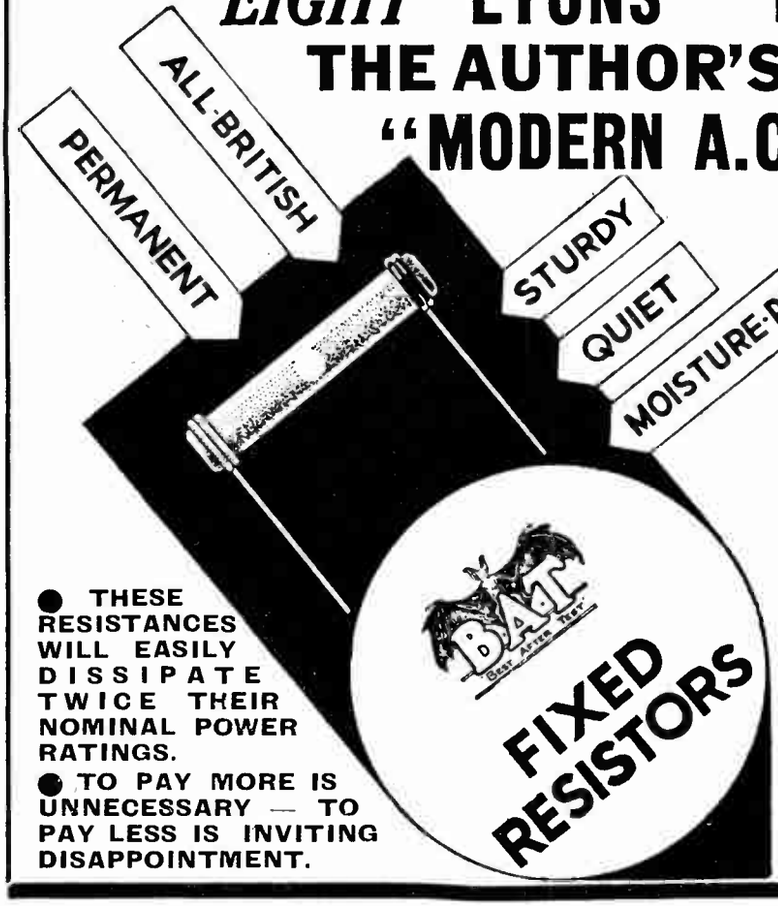
EIGHT ● LYONS' "B·A·T" RESISTANCES— THE AUTHOR'S *FIRST CHOICE* FOR THE "MODERN A.C. QUALITY AMPLIFIER"



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The very exacting tests, to which all LYONS "B.A.T." (Best-After-Test) 100% BRITISH-MADE RESISTANCES are subjected, ensure a reliability that has spread their fame far and wide throughout the world. Not only are they regularly specified by all the leading technical authors, but also they enjoy the widest popularity amongst well-informed Home-Constructors and the leading Set Manufacturers.

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1 "HUMDINGER," 30 Ohms ...	2/6

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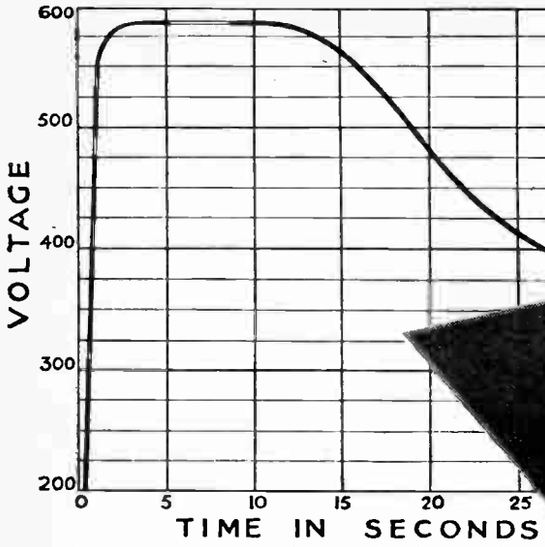
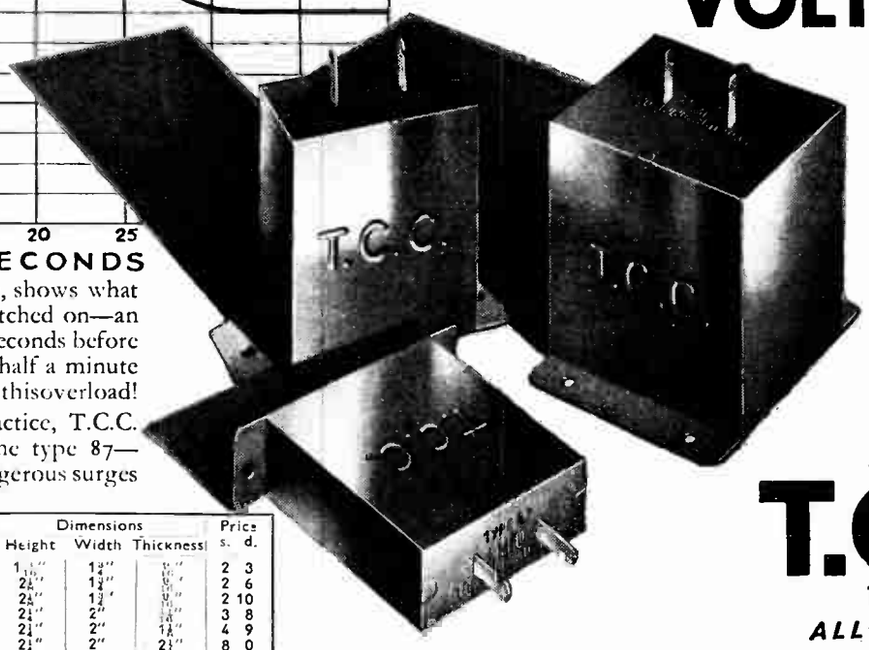


YOUR CONDENSERS MUST STAND UP TO THESE HIGH SURGE VOLTAGES

The above graph, an actual example, shows what happens when an A.C. Set is switched on—an immediate rise to 595 volts, then 30 seconds before normal conditions are reached. For half a minute smoothing condensers are subjected to this overload!

Again to the fore in condenser practice, T.C.C. have produced a new condenser—the type 87—definitely built to withstand these dangerous surges—up to 650 volts. Play for safety! Ask for the *surge voltage* figure of your condensers, be sure they are T.C.C.–the condensers in the green case.



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Capacity Mfds.	Dimensions Height	Width	Thickness	Price s.	d.
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0.25	2 1/16"	1 1/4"	9/16"	2	6
0.5	2 1/16"	1 1/4"	1"	2	10
1.0	2 1/16"	2"	1"	3	8
2.0	2 1/16"	2"	1 1/2"	4	9
4.0	2 1/16"	2"	2 1/16"	8	0

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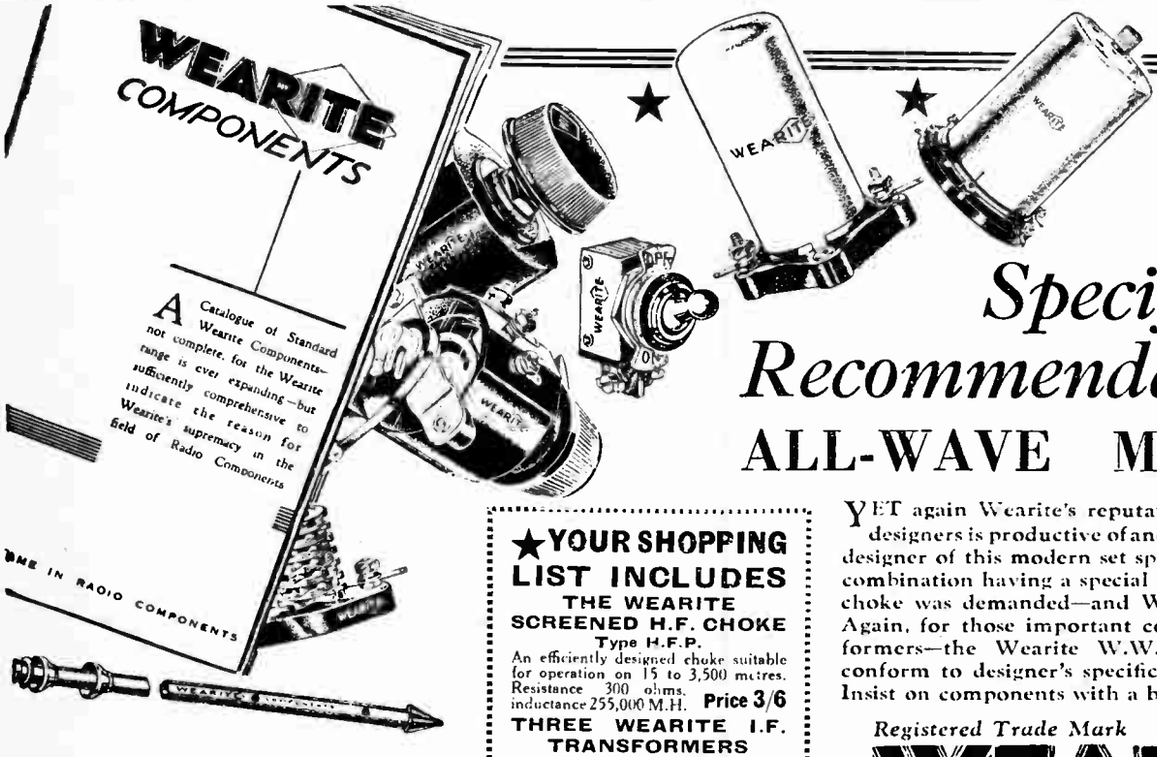
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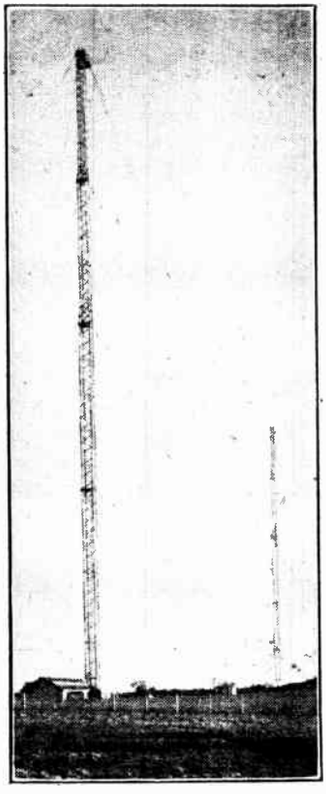
NEWS of the WEEK

Current Events in Brief Review



MASTS AT MOYDRUM. The aerial system of the new high-power broadcasting station of the Irish Free State. The transmitter has a power of 60kW. and was built by the Marconi Company.

Lions in their Lairs

WHERE and how Michael Faraday, Guglielmo Marconi, and other scientists made their revolutionary discoveries will be vividly demonstrated in the "Rooms of the Scientists" at the *Daily Mail* Ideal Home Exhibition, which opens at Olympia, London, W., on Wednesday, March 29th.

Ladies Welcomed

THERE are 232 licensed feminine radio amateurs in the world, according to the American Radio Relay League, which adds that 190 of the ladies are in the United States.

"Amateur radio has welcomed these modern Dianas of the magic telegraph key and microphone" is the League's gallant comment.

Directional Broadcasting from Vienna

THE great Austrian broadcasting station at Bisamberg, near Vienna, is already taking shape. Among its interesting features is the steel mast aerial (similar to that at Hilversum) working in conjunction with a second reflector aerial 150 yards away, which should have the effect of strengthening the radiations in a westerly direction. Vienna being in the eastern part of the country, this arrangement should produce better reception conditions in Austria and give listeners here a better chance.

Radio at the B.I.F.

NO fewer than thirty-five wireless firms are exhibiting in the Hall of Music and Radio, which forms a prominent section of the British Industries Fair, opening on Monday next, February 20th, at Olympia.

No Wireless for Workless

THE Schoonhoven (Holland) Municipal Council has decided that no unemployed person may subscribe to a radio relay service or acquire a wireless set without incurring the loss of his unemployment pay.

Cause and Effect

BAVARIAN listening licences increased rapidly in number after the opening of the high-power transmitter at Leipzig on December 3rd, and the total is now 331,131. The January increase of 9,326 was approximately a third of the total increase during 1932.

Mansion as Radio Palace

BRICK by brick, each one numbered, the façade of a patrician's mansion in Amsterdam is being removed in order that the building can be transformed into a radio palace worthy of forming the headquarters of Avro, the great Dutch broadcasting association.

When the wireless apparatus has been installed in the basement, and the large rooms have been reconstructed as studios and offices, the façade will be replaced, and, externally, the building will be as venerable as ever.

German Amateur's Triumph

THE novel Accuracy Contest, organised by the society of leading European amateur transmitters known as the Ragchewing Club, drew participants from regions as wide apart as Finland and the Sahara, and in a keenly fought contest the German station, D4UAN, captured first place.

The object of this contest, as announced in *The Wireless World* a few weeks ago, was to promote efficient operating by encouraging participants to relay messages from country to country in the language of the originating country, and not in the ubiquitous English generally employed among "hams."

D4UAN, admirably located "right in the centre of things" at Nuremburg, amassed the enormous total of 933 points, by handling no fewer than 206 messages. The runner-up, PAOQQ, of Eindhoven, obtained 428 points with ninety messages. Among the British competitors, station G2ZQ, operated by Mr. J. Hunter, of Blackheath, secured first place among the ten "G" participants, all work being carried out on the 7,000 k.c. (42-metre) amateur band.

"Electrical Music" Postponed

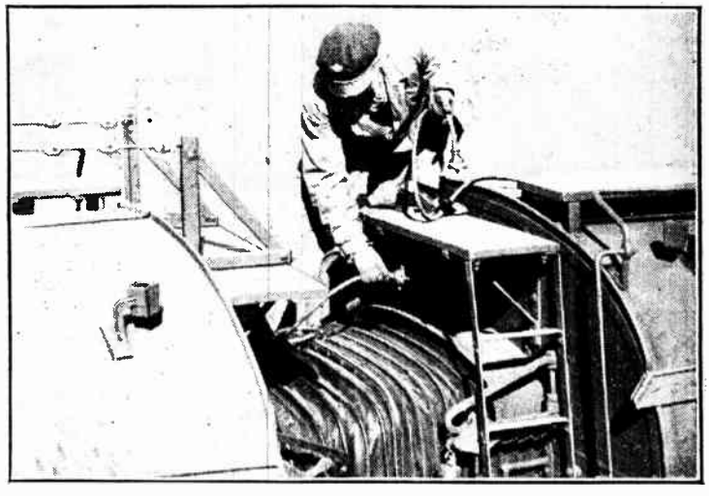
THE European broadcast of "electrical music" arranged for February 16th and referred to in our last issue, was postponed at short notice. News of the revised date of this interesting concert will be eagerly awaited.

Licences for Norwegian Listeners

ON July 1st next the Norwegian State will take over control of all broadcasting stations from the private companies now owning them. Thenceforth all wireless sets must be licensed at a fee of 10 crowns (approximately 18 shillings) per annum.

Amateur Transmitter for Everest Attempt

THE British expedition which will shortly leave England to conquer Mount Everest, under the leadership of Mr. Hugh Ruttledge, is relying largely upon radio to enable the advanced exploring party to keep in touch with the base camp, where a powerful commercial-type transmitter will be erected. But at the advanced radio station at camp No. 3, at an altitude of approximately 21,000 feet, a special portable transmitter will be used which has been constructed by two members of the Radio Society of Great Britain, G6RL and G6US.



RADIO ROUTINE. One of the daily tasks of this shunter on the Hungarian State Railways is to join up the wireless reception cables when connecting the radio car to other coaches.

The portable transmitter is a redesigned ex-W.D. trench set rebuilt to form a self-excited continuous-wave transmitter, operating on wavelengths between 60 and 120 metres. Two P.M.4 valves, supplied by the courtesy of the Mullard Wireless Service Co., are used in the transmitter; the maximum input is 15 watts; H.T. is supplied by an ex-W.D. hand generator and L.T. is taken from Siemens inert cells.

The whole installation is extremely compact and light, and can be carried by one man.

Wireless Parts for Unemployed

AN appeal for unwanted wireless components is issued by the Peel Institute, 65, St. John Street, London, E.C.1, in connection with work which has been organised for unemployed men in the district. All sets built at the Institute are used by the men themselves. Enquiries will be gladly answered by Mr. A. R. Kelly at the Institute.

Three-hour Funeral Broadcast

ACCORDING to a Berlin correspondent, a singularly depressing broadcast took place on Sunday, February 5th. All German stations except Königswusterhausen, Stuttgart, and Munich broadcast an electrical recording of the complete funeral service of a young Nazi who was shot on January 30th, and the item lasted three hours!

What's Wanted

THIS is the title of an interesting booklet issued by the Institute of Patentees, giving a list of 895 "needed inventions." The wireless section includes the following:—

Coils which have square-topped selectivity curves to a greater degree than those at present in use.

A really satisfactory interference eliminator.

Cheap device for automatically switching a set off when the station goes off.

H.F. inductance coils stamped out of sheet metal in a flat spiral.

An efficient loud speaker (the present efficiency is only one or two per cent.).

A Q.P.P. Set

IMPRESSIVE results were obtained on a moving-coil loud speaker actuated by 1½ watts output when the "Aerodyne-Hawk" battery-operated receiver of Messrs. Hustler, Simpson and Webb, Ltd., was demonstrated last week. This new set incorporates quiescent push-pull.

Automatic Volume Control

The Use of the Double-Diode Triode Valve for Quiet, Amplified and Delayed A.V.C.

By C. N. SMYTH, B.Sc.

(Technical Staff, The General Electric Co., Ltd.)

A NUMBER of articles have recently appeared in this journal on automatic volume control,[1] and some apology might be thought necessary for adding another to the number. Actually, however, very rapid strides have been made during the last few months in the development of more elaborate circuits for obtaining quiet and delayed automatic volume control. Another modification has just been developed in America, that of amplified automatic volume control, which, by reason of its advantages, is bound to have a considerable effect on the design of A.V.C. circuits.

A study of Fig. 1 in conjunction with the following brief explanation will show

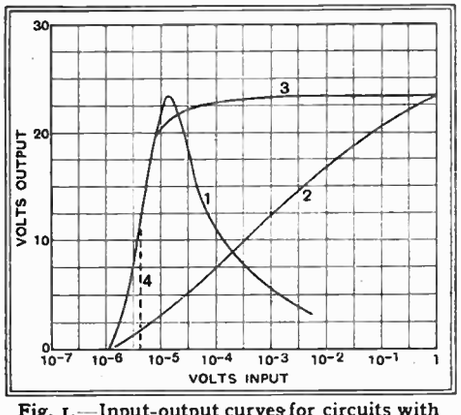


Fig. 1.—Input-output curves for circuits with different types of volume control. Curve 1 is the case where A.V.C. is not included. Curve two is for simple A.V.C., while curve 3 represents delayed A.V.C. Curve 4 which follows curve 3 is for Q.A.V.C.

at once the respective behaviour of circuits having various types of volume control. Curve 1 shows the input-output graph for a receiver having no A.V.C. system at all. Note the effects of overloading on large signals; this curve was obtained with the manual volume control at maximum setting. Curve 2 shows the effect of a simple A.V.C. circuit. The action commences immediately, and, although overloading is effectively prevented, even the weakest signals are attenuated. Curve 3 represents delayed A.V.C., a more satisfactory system, which does not come into play until the detector is nearly overloaded, after which it prevents any further increase of voltage. Curve 4, which follows curve 3 except at the bottom end, is for the same circuit as 3, only the Q.A.V.C. (Quiet Automatic Volume Control) action prevents any signal being amplified which is not above a certain predetermined value; in this case 5 microvolts. This value is adjusted in practice to exceed slightly the noise level at the place of reception, thus preventing the set responding to all the mush and noise that is so noticeable between tuning positions on A.V.C. sets.

IT is not until a set equipped with automatic volume control is handled that the tremendous advantages of the system are appreciated. The bugbear of fading almost disappears, and the constant volume level for different stations renders the process of tuning much more satisfactory. In this article the use of the new double-diode triode valve for delayed, quiet and amplified automatic volume control is explained.

It is desirable to describe the double-diode triode valve before we proceed to the actual circuits. This valve has been developed especially for use in A.V.C. circuits, and is a three-electrode valve, having two small auxiliary anodes A1 and A2, as shown in Fig. 2. A screen connected to the cathode is incorporated within the valve in order to reduce the capacity between the main and auxiliary anodes. If this capacity is not very small the high audio-frequency notes will be transferred to the anode and amplified by the output valve, spoiling the quality for low settings of the manual volume control and preventing it reducing the set to silence.

A large number of circuits have been developed employing double-diode triodes, and it would be impossible to give them all here. In general, the schemes fall under the four following headings:—

(1) Use of the valve as a full-wave rectifier and for providing simple automatic volume control.

(2) Use of one diode for normal single diode rectification and the other to produce delayed A.V.C.

(3) Use of one diode for half-wave rectification and simple A.V.C., and the other for the Q.A.V.C. action.

(4) Use of one diode for half-wave rectification and for A.V.C. in conjunction with the triode as amplifier, while the other diode provides the required delay action.

The remainder of this article will be devoted to the detailed description of four circuits, which are described for a super-heterodyne receiver, but they will apply equally well to a straight set.

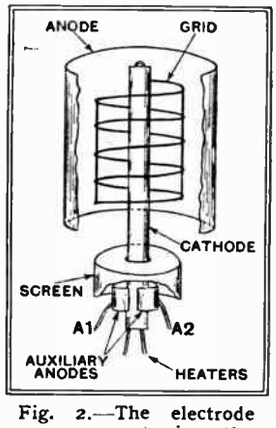


Fig. 2.—The electrode arrangement in the double-diode triode valve specially designed for A.V.C.

CIRCUIT 1. A simple circuit giving full-wave rectification is shown in Fig. 3. The two auxiliary anodes provide full-wave rectification in conjunction with the cathode. The rectified voltage is developed across the load resistance R1. This voltage may be divided into a D.C. and an A.C. component. The D.C. component is led off through a resistance R3 to provide the A.V.C. voltage, and the A.C. component is passed through the condenser C on to the grid of the triode. Automatic grid bias is provided by the anode current flowing through R4. R2 is a decoupling resistance, and R1 is usually a potentiometer employed as a manual level control.

CIRCUIT 2. In Fig. 4 is shown the second method of using a double-diode triode, in this case to produce delayed A.V.C. The diode A1 serves as a normal half-wave rectifier, and the audio-frequency voltage is passed on to the grid of the triode in the same way as for circuit 1. The diode A2 is fed from the tuned circuit through the small blocking condenser C2 and a D.C. bias applied to A2 through a high resistance R5. In consequence of this no rectification takes place in the A.V.C. circuit until the peak value of the signal exceeds the bias v, tapped off from the potentiometer R4. The set gives its maximum amplification until this point is reached, when the A.V.C. is called into action and prevents any further increase in output; for obvious reasons, v is adjusted so that the detector is just prevented from overloading, and the full output obtained without distortion.

[1] See Issues dated Aug. 12th, Sept. 23rd and 30th, 1932, also Jan. 6th and 13th, 1933.

Automatic Volume Control—

CIRCUIT 3. We come now to a more elaborate circuit for producing both quiet and delayed A.V.C. The circuit incorporates two valves, and is really a further development of circuit 2, the half-wave rectification and the delayed A.V.C. action being exactly the same, except for the way in which the grid bias is produced for the triode V1. A study of the circuit in Fig. 5 shows that this bias is produced from two sources, a small automatic bias due to the valves' own anode current flowing through R4 and a large additional bias when anode current flows through the high resistance R5.

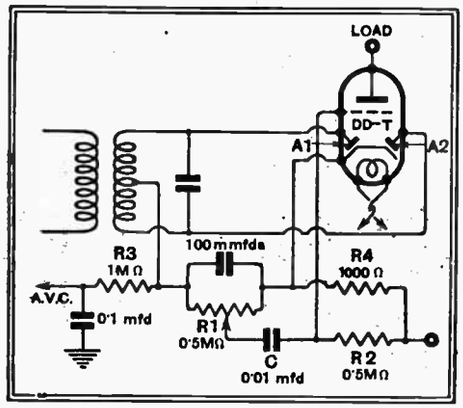


Fig. 3.—Here the double-diode triode is used as a full-wave rectifier and also provides A.V.C.

When no signal is being received, or when the set is not correctly tuned (say, ±2KC) no voltage is developed across the tuned circuit L2C2, and as a result there is no bias on the grid of the second valve V2, which takes anode current and puts a large blocking bias on the grid of V1, thus preventing any signal reaching the output valve.

Directly a signal is received whose peak value exceeds the delay voltage single-diode rectification in V2 takes place, and the negative D.C. voltage developed across R8 is applied to the grid of V2, preventing the flow of anode current and releasing the blocking bias on V1. The potentiometers R7 and R4 are adjusted to give the required delay to the Q.A.V.C. action and A.V.C. respectively.

Amplified A.V.C.

Before proceeding to the next circuit it will be advantageous to consider briefly what is meant by amplified automatic volume control, and the advantages which are claimed for it. One of the difficulties met with in A.V.C. systems employing diode or leaky-grid detectors is the need for a large signal on the grid of the detector, to produce the required bias. For example, in order to produce a bias of 30 volts with single-diode detection, $30/\sqrt{2}=21$ volts R.M.S. output are required from the I.F. amplifier; or 42 volts if full-wave rectification is employed. This large voltage requires a specially designed I.F. amplifier containing a stage additional to the number normally required or else employing pentode valves. Also, it is not possible to control the last valve of the I.F. amplifier by the A.V.C. due to the difficulty of then obtaining sufficient output.

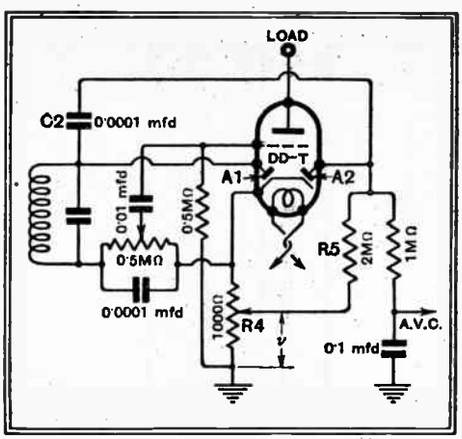


Fig. 4.—A delayed A.V.C. system where one diode is used as a half-wave rectifier.

Amplified automatic volume control does away with all these troubles simultaneously by operating, and so giving sufficient bias, from a small signal. In point of fact the output from the detector may be divided by the amplification factor of the triode. If this is 6, then to get a bias of 30 volts with single-diode rectification only 3.5 volts output will be required from the I.F. amplifier. For this small voltage there is no objection to putting the A.V.C. on to the output valve of the I.F. amplifier, giving at once a greater range of control and a more level response to the A.V.C. action.

Fig. 6 shows the broad principles of this circuit. Rectification takes place in the normal manner, and a voltage is developed across the load potentiometer R1 which also acts as a manual volume control, the audio-frequency voltage being transferred to the grid of the triode by means of the large blocking condenser C2. Additionally, the D.C. voltage which is developed across R1, and which is normally employed to give the A.V.C. voltage directly, is also applied to the grid of the triode through the decoupling resistance R2. The triode than acts simultaneously as a D.C. and an A.C. amplifier. The A.C. is amplified in the normal way, and any change in the D.C. voltage causes a corresponding change in the steady current through the valve. The load resistance R3 is placed in the cathode lead of the valve instead of, as is usual, in the anode circuit. The audio-frequency output is then developed between the cathode and earth.

The A.V.C. voltage is led off from the cathode through a suitable smoothing circuit C5 R5. The point E on the potentiometer AB is earthed directly, and the A.V.C. voltage is negative with respect to earth by an amount equal to the difference in the voltage across EB and the voltage dropped in R3. The voltage across EB is usually between 30 and 40 volts and represents the maximum bias which can be applied to the controlled valves. The voltage dropped in R3 is controlled by the anode current of the valve, which, in its turn, depends on the received signal. Thus for small signals the anode current is large and the cathode is only slightly below earth potential, while for increasing signals the anode current diminishes and the A.V.C. voltage becomes more and more negative.

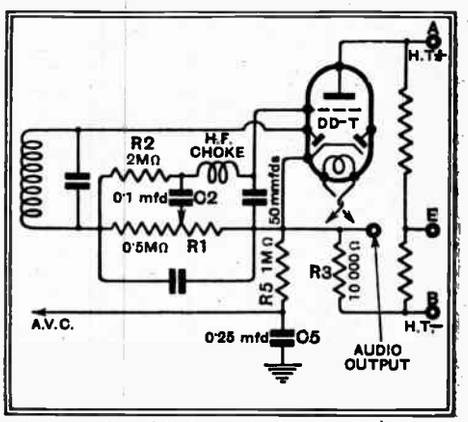


Fig. 6.—Simplified circuit showing action of amplified automatic volume control.

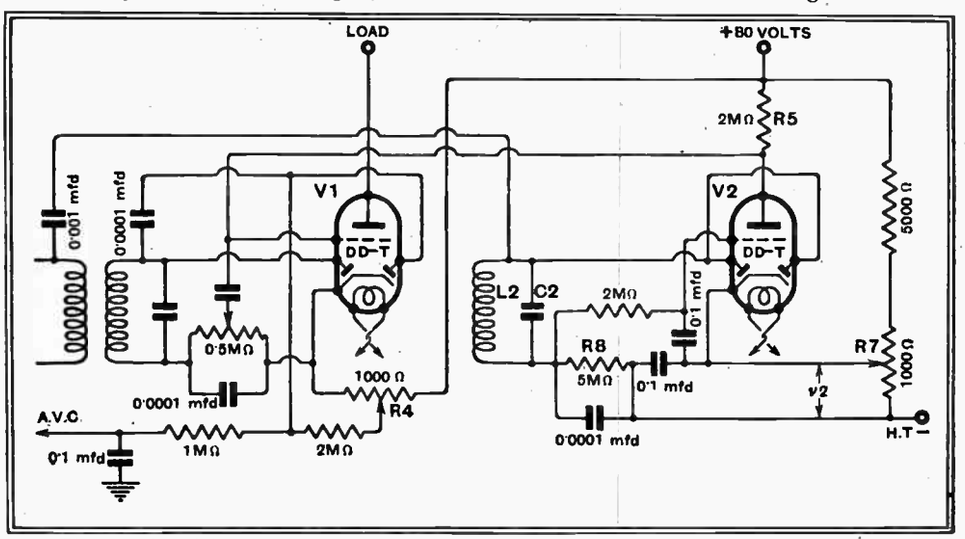


Fig. 5.—An elaborate circuit using two double-diode triodes for delayed and Q.A.V.C.

CIRCUIT 4. The fourth circuit which gives delayed amplified A.V.C. with a single double-diode triode is shown in Fig. 7, where it is arranged for coupling into a push-pull output stage. The action should be clear from the preceding explanation, but one or two points are worthy of special note. First, in order

Automatic Volume Control—

to obtain two equal outputs to drive the push-pull stage the load is placed partly in the cathode and partly in the anode circuit, R3 and R4 being the two load resistances respectively, the values of which are adjusted in order to equalise the outputs from the points P and Q. C1 and C2 are blocking condensers which must be used to prevent D.C. voltages from reaching the grids of the push-pull output stage.

In order to obtain the delay action the A.V.C. voltage is not taken directly from the cathode circuit, but tapped off from the second diode A2, through a suitable smoothing circuit R6 C6. This second diode is normally biased from the potentiometer R7, the slider S of which is set so as to give the minimum bias required by the controlled valves. With no signal the cathode is positive with respect to S by a voltage equal to the delay voltage, and until this delay voltage is exceeded the diode A2 does not rectify and the grids of the controlled tubes remain at the same D.C. potential as S. As, however, the signal increases the cathode becomes more negative, and eventually assumes the same potential as A2, which then takes circuit. Due to the low impedance of the diode compared to the resistance R5, A2 thereafter remains at approximately the same potential as the cathode, the A.V.C. then taking its normal effect just as it would if connected directly to the cathode.

Due to the lower amplification required with this type of automatic volume control, an inter-carrier noise-suppressing device is not so necessary, and it is usually sufficient to make the threshold sensitivity of the set slightly above the prevailing noise level.

It is hoped to follow this article with another describing a commercial development of the double-diode triode valve.

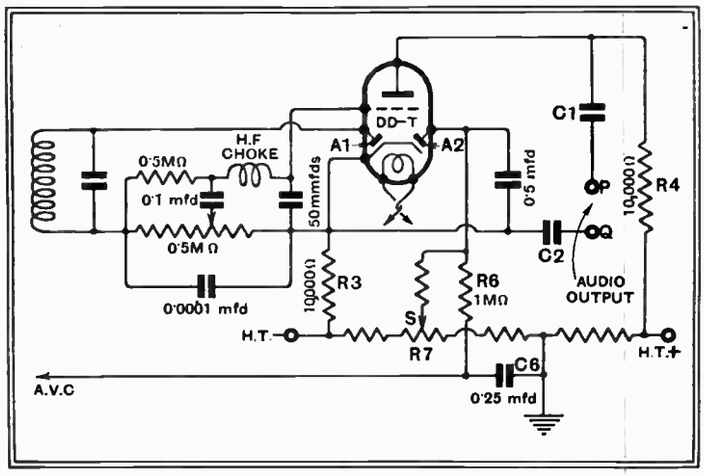
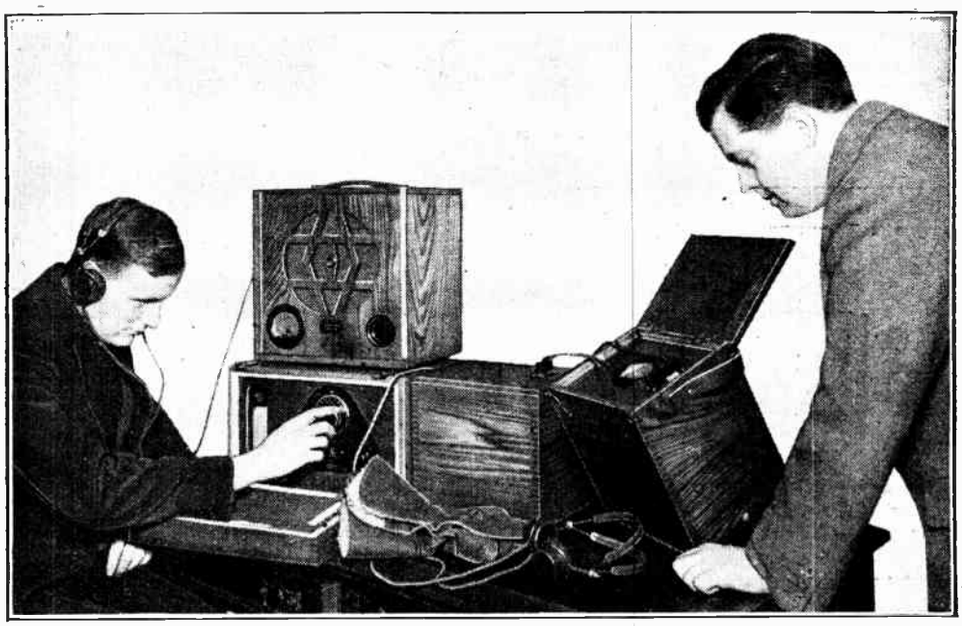


Fig. 7.—Delayed and amplified A.V.C. arranged for coupling into a push-pull output stage.

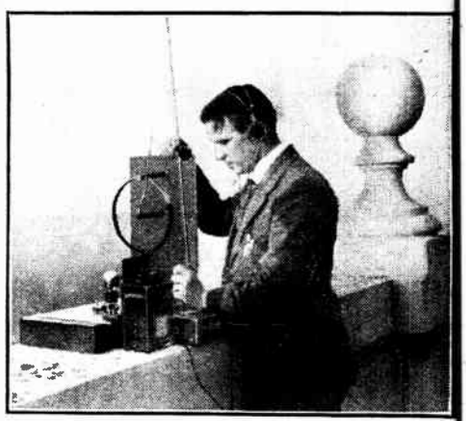
WIRELESS ON THE EVEREST EXPEDITION



Rapid communication with the base camps should be of the greatest assistance to the party which will shortly attempt to scale the world's highest mountain under the leadership of Mr. Hugh Ruttledge. The photograph shows (left) Mr. Smythe, the second in command, examining the McMichael short-wave receivers which will be used as far as base camp No. 3, half-way towards the summit. On the right is Mr. David Richards, another member of the expedition, who has been responsible for the wireless organisation.

"ULTRA-SHORTS" IN PORTSMOUTH

ULTRA-SHORT-WAVE tests with amateur-built apparatus are yielding some interesting results in the Portsmouth district, where Mr. Albert Parsons, lecturer at the Municipal College, has been transmitting over the city roofs on wave-lengths of the order of 150 centimetres.



Mr. Albert Parsons with his ultra-short-wave transmitter on the roof of the Technical Institute, Portsmouth.

Excellent speech has been transmitted on 150-200 centimetres without noticeable deflection by intervening objects although some deviation has been observed when using an impromptu harmonic wave reflector system.

It is interesting to note that interference by electrical machinery was practically nil on the 200-centimetre wave despite the near proximity of a mercury arc rectifier used for the town supply.

We understand that Mr. Parsons will shortly attempt ultra-short-wave tests between Southsea and the Isle of Wight.

o o o o

BOOKS RECEIVED

Wireless: Its Principles and Practice, by R. W. Hutchinson, M.Sc. Written for wireless amateurs, experimenters and students, and comprising the theory of wireless telegraphy and telephony and its practical working, expressed in a simple, rational and scientific way. Pp. 271+xii., with frontispiece and 220 diagrams and illustrations. Published by the University Tutorial Press, Ltd., London. Price 3s. 6d.

Wie helfe ich mir Wenn mein Rundfunk-Empfänger Versagt, by Hans Coler and Karl Roessger. 2nd edition, revised. A short and instructive book on tracing and repairing faults in wireless receivers. Pp. 38, with 27 illustrations and diagrams. Published by Rothgiesser und Diesing A.G., Berlin. Price R.M.2.

Physics in Meteorology, by G. C. Simpson, C.B., C.B.E., D.Sc., LL.D., F.Inst.P., F.R.S., Director of the Meteorological Office, London. A reprint of a lecture given before the Institute of Physics in November, 1932, showing the application of sound, light, heat, magnetism and electricity, to the solution of problems of meteorology. Pp. 22, with 5 diagrams. Issued by the Institute of Physics, London.

Hints and Tips for Motor Cyclists (11th Edition), compiled by the staff of *The Motor Cycle* and containing 721 useful hints and instruction on all subjects connected with equipment, repair and upkeep of motor cycles. Pp. 204+xiv. Published by Iliffe & Sons Ltd., London. Price 2s.

Parallel-Feed Precautions

The Limitations of Decoupling

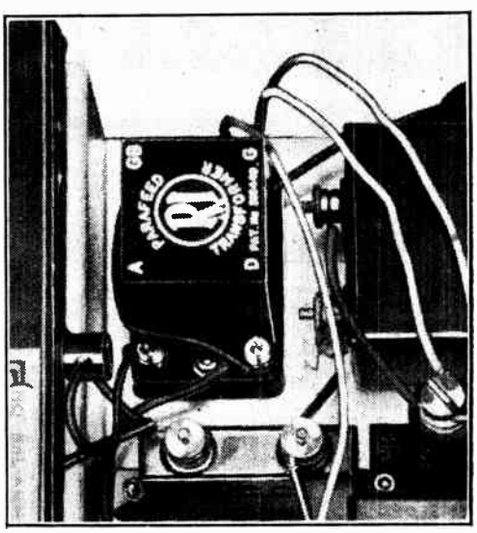
By M. G. SCROGGIE, B.Sc., A.M.I.E.E.

SOMETIMES in changing over from one system to another which is better—or more fashionable—the anticipated improvement fails to materialise. The resulting disappointment may slightly cloud our normal judgment and cause us to lay the blame on the new system. Nevertheless, the case against it is not necessarily proved, for there is a possibility that certain other effects have been brought into operation that were not there before and that are no essential part of the new arrangement.

The now popular parallel-feed transformer coupling is a case in point. In adopting it there is a risk of running into at least one danger that is not obvious. The fact that no undesirable effects due to this cause exist when a directly fed transformer is in use tends still further to conceal the trap from the unwary.

To avoid creating needless alarm it should be pointed out at this stage that users of battery-driven sets, or, at least, those with grid-bias batteries, need read no further. On the other hand, readers addicted to resistance or choke coupling should, for the purposes of this article, consider themselves, however reluctantly, to be included among the followers of the parallel-feed transformer coupling, for the matter applies, in lesser degree, to them.

It should also be mentioned that the parallel-feed system includes more than one circuit arrangement. The one dealt with here is that which seeks to gain extra amplification by applying both primary and secondary voltages to the grid of the succeeding valve, or occasionally to give the effect of a *lower*-ratio transformer by connecting in similar fashion, but with one of the windings reversed. This is often described as the auto-transformer connection, and requries that the two windings of the transformer be connected together at one point.



Typical example of a parallel-feed transformer with its associated components in a *Wireless World* receiver.

It is shown in Fig. 1. The items enclosed within a dotted line can be purchased as one unit. R1 is the resistance for feeding the first valve with current and at the same time diverting "signals" through the transformer primary winding P by way of the condenser C1. The circuit to the cathode of the following valve is completed by C2, another fairly large capacity. A signal voltage is therefore set up between the cathode X and the point Y (which, as C1 is supposed to be large enough in capacity to offer negligible impedance, is practically the same thing as the anode of the previous valve). Owing to the action of the transformer, another voltage three or four times greater — according to the step-up ratio—is generated by the secondary winding between Y and Z (the grid of the second valve).

IS the extra amplification obtained by auto-coupling an L.F. transformer worth while? The author points out the difficulties which arise in decoupling this circuit and shows that in a mains set it is preferable to use the more conventional transformer coupling in which the primary and secondary are not directly connected.

If the transformer windings have been connected up the right way the total voltage applied to the valve between X and Z is the original voltage *plus* the multiplied voltage. So far everything goes according to plan.

Now we turn attention to the little group of components in the corner—R2, R3, and C2. This is the usual recommended system for providing the second valve with grid bias. R2 carries the valve current, and its resistance is so chosen as to drop the correct number of volts for biasing purposes. The resistance generally lies between 300 and 1,500 ohms, the actual figure depending on the type of valve.

The current carried by R2 consists not only of the unvarying feed to the valve, but also of the signal currents created in the second valve by the action of the transformer coupling. Now, it is only the voltage dropped by the former that we wish to apply as negative bias to the grid—or, what is exactly the same thing, positive bias to the cathode. If the signal voltages also are fed back between cathode and grid they conflict with those arriving lawfully *via* the transformer, and the result is a loss of amplification that may amount to more than 80 per cent. in power.

To overcome this difficulty the signal currents may be provided with an easy short-circuit path in lieu of R2 by shunting it with a condenser. The effectiveness of such a condenser depends on frequency; if it is 1 mfd., for example, at 5,000 cycles it is 30 ohms; at 500 cycles, 300 ohms; and at 50 cycles 3,000 ohms. So that while it provides an effective by-pass for the high notes, at 50 cycles it might almost as well not be there. While the high notes are up to full strength the low are brought down to perhaps one-fifth power, and the last state is worse than the first.

Shunting the Decoupling

But by interposing R3, of about 100,000 ohms, even the 3,000 ohms of C2 at 50 cycles is virtually a short-circuit, and the signal voltage across R2 is prevented from doing anything between X and Z, which are the points between which the input to the valve is reckoned.

If the foregoing explanation has been followed it will be understood that the condenser C2 has been rendered effective only by the contrast between its 3,000 ohms or less and the 100,000 ohms of R3. If R3 were reduced to 3,000 ohms the arrangement would be much less effective—only about half as good. For example, if a comparatively low resistance were to be connected in parallel with R3, the decoupling or filtering effect of the whole arrangement would depend

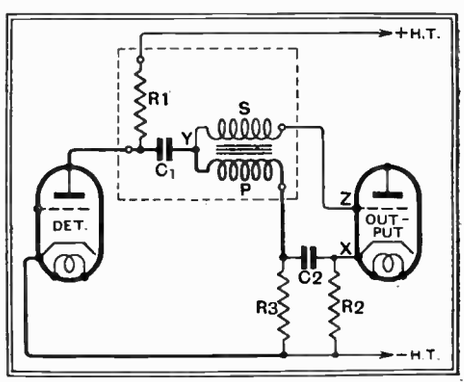


Fig. 1.—Parallel-feed and auto-coupled L.F. transformer. The decoupling resistance R3 is shunted by the circuit shown in heavy lines and so becomes partially ineffective.

Parallel-feed Precautions—

almost entirely on the low resistance, and no increase of R3 would avail to put things right.

Of course, nobody would dream of connecting such a low resistance intentionally. And yet one has been connected in the circuit diagram, just as surely as if it had been labelled R4. No award is offered for finding it, for it has been marked in heavy lines. It is true that it comprises several assorted items, to wit, one valve, one condenser, and one transformer primary winding. The resistance of an A.C. valve in the position shown is generally about 10,000 ohms. The condenser has quite a low impedance if it is doing its job properly. The only high impedance is P.

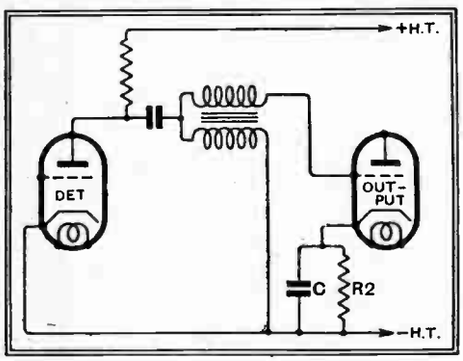


Fig. 2.—The automatic bias resistance R2 may be shunted by an electrolytic condenser of 50 to 100 mfd., thus preventing the disability of the circuit of Fig. I.

This takes to itself practically the whole of the signal voltage across R2, in other words, just the voltage we are anxious to exclude from the valve input. But much worse than that; the transformer steps it up and applies the multiplied signal, *plus* the original, between X and Z.

This makes the position very serious indeed. It is bad enough to have the voltage drop across the bias resistor fed back, but if it is multiplied by four or five en route more than four-fifths of the amplification may disappear, while if the secondary is reversed it is usually capable of setting up continuous "motor boating," which none of the usual decoupling devices avails to cure.

Battery bias is not a remedy to appeal strongly to the owner of an "all-electric" set. One alternative is a very large condenser C across to R2 (Fig. 2). Nothing less than 50 or 100 mfd. is advised, and, fortunately, such a large capacity is obtainable at reasonable cost, since the development of electrolytic condensers. Another cure is to connect the cathode of the first valve so that the offending voltage is not included (Fig. 3). An ordinary condenser of 1 mfd. or thereabouts is then suitable for C2, and

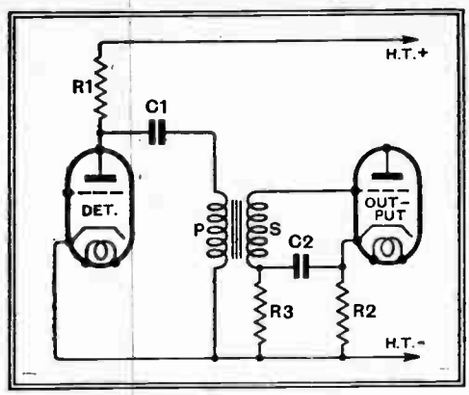


Fig. 4.—Although the extra amplification of auto-coupling is lost by this method of connection, decoupling becomes straightforward.

R3 is the usual 100,000 ohms. It is very important to see that the grid of the first valve is preserved from defilement by the objectionable feed-back. Generally it is a detector, with a grid leak taken straight to its cathode. Then all is well.

Alternative Circuits

A disadvantage of the Fig. 3 system is that the current to *both* valves passes through the same biasing resistor R2, which consequently must be lower in resistance.

Still another remedy is to connect the transformer as in Fig. 4. This is the method adopted in certain parallel-feed units. The two valves are then *inductively* coupled, and the primary winding is returned to a point where it does not complete the feed-back path. The extra amplification that is possible with a parallel-fed auto-transformer is thereby sacrificed, but it is better to do this voluntarily than to have a much larger slice of amplification forcibly taken away.

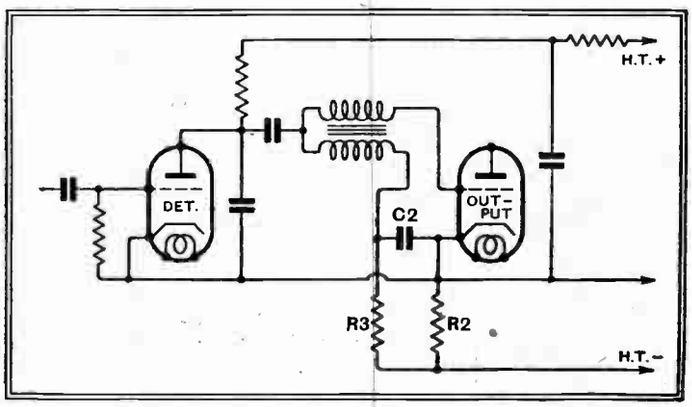


Fig. 3.—Another cure is to connect the cathode of the first valve as shown above.

Unless these matters are in order the parallel-feed coupling certainly cannot give of its best. The bias system of Fig. 1 breaks down also for resistance or choke coupling, but the effects are not so dire, because of the absence of step-up. Nevertheless, there is no point in using methods that don't work properly, and may give rise to distinctly poor quality of reproduction.

CLUB NEWS

Automatic Telephones

SLADE Radio deserted wireless topics at a recent meeting, when Mr. R. G. St. George lectured on "Automatic Telephones." With the aid of lantern slides members were given a very clear understanding of the principles of the dialing, ringing and receiver circuits. A diagram of a 25-line private exchange was of the utmost interest.

The Society still has vacancies for new members, and enquiries will be welcomed by the Hon. Secretary at 110, Hillaries Road, Gravelly Hill, Birmingham.

Practical Direction Finding

PRACTICAL hints on direction finding and field days were given by Mr. Alexander Black at a recent meeting of the North Middlesex Radio Society, members of which have long been fascinated by this particular branch of radio. Mr. Black brought with him a D.F. set constructed on new lines. He considered that in the absence of exceptional precautions screening of the frame was a waste of time, and reminded his hearers of the success of Mr. Maurice Child's scheme last summer when using an open aerial and adjustable coupling coil for neutralising the vertical component of the signal—the cause of the majority of errors.

Hon. Secretary: Mr. E. H. Laister, Windflowers, Church Hill, London, N.21.

Electric Clocks

ELECTRIC clocks provided an interesting theme of discussion at the meeting of the Croydon Wireless and Physical Society on January 23rd, when Mr. A. J. Webb, M.A., B.Sc., A.M.I.Mech.E., gave an outline of the various applications of electricity to horology. Several modern electric clocks were demonstrated, including the modern Bulle self-driven clock, the synchronous motor clock driven from the 50 cycle A.C. mains supply, and a Hope-Jones synchronous master pendulum made by the lecturer.

Hon. Secretary: Mr. H. T. P. Gee, 51-52, Chancery Lane, London, W.C.2.

For Short-wave Enthusiasts

A NEW Short-wave Listening League is willing to collaborate with any organisation in the exchange of reception reports and general research on the high frequencies. The members send notification of transmissions heard to headquarters each month.

All communications should be addressed to Mr. B. Dys, 213, Green Lane, Rawmarsh, Rotherham, Yorks.

Ratepayers' Radio

SOME interesting tests on the detection of distortion were carried out by Mr. Valentine, of Messrs. The Mullard Wireless Co., Ltd., at the last meeting of the Radio Section of the New Eltham Ratepayers' Association. Two amplifiers were used, connected to a single pick-up and speaker; by means of switches each amplifier was brought into use in turn. Listeners could detect at once the effect of changing valves and grid bias and could observe the baneful effects of overloading.

Hon. Secretary: Mr. A. E. Gillborn, 87, Montbelle Road, New Eltham, London, S.E.9.

Photo Cells Explained

"PHOTO-ELECTRIC Cells and Gas-filled Relays" was the title of a lecture given by Mr. Inchley, of the General Electric Co., Ltd., at a recent meeting of the Smethwick Wireless Society. The lecturer dealt with the difficulties of manufacturing caesium cells and by working models demonstrated their practical applications. Describing the construction and action of the gas-filled relay, the lecturer demonstrated the various effects produced by the combination of photo-electric cell and relay using D.C. and A.C. He showed that the filament emission of the relay was sufficient to light a 15-watt lamp.

Hon. Secretary: Mr. E. Fisher, M.A., 33, Freeth Street, Oldbury, near Birmingham.

BROADCAST BREVITIES

By Our Special Correspondent

The Placid B.B.C.

PARLIAMENT can scarcely be flattered by the sublime nonchalance with which everyone at Broadcasting House is contemplating the House of Commons debate on broadcasting on Wednesday next, February 22nd. Even the existence of two special Parliamentary Committees—one of them self-appointed—to enquire into the activities of the Corporation fails to ruffle the beatific calm on the faces of those in authority at Portland Place.

Let 'Em All Come

It is being whispered, indeed, that Sir John Reith would welcome many more Parliamentary Committees with the same objects in view, for, although "in a multitude of counsellors there is wisdom," it is no less true that "too many cooks spoil the broth." If, as could easily happen, the Committees begin quarrelling among themselves. . . .

A Great Night at Westminster

Whatever happens, the debate on February 22nd is certain to be entertaining, and I wish the B.B.C. could arrange to broadcast it. If the truth were known, nearly everybody on both sides of the House is a broadcast listener and, as such, is anxious to assert his or her own viewpoint.

What a night!

Pleasant Sunday Evenings

MANY listeners to the foreign programmes will be relieved to know that the B.B.C. definitely state that no attempt is to be made to fill the 6 to 8 p.m. interval on Sundays with programme material of any description. This categorical denial of a rumour is reassuring, and makes one wonder why such rumours are not strangled at birth.

An Australian Enquirer

AFTER several months' stay in this country, during which he has conducted a thorough investigation of B.B.C. methods, Dr. R. S. Wallace, Vice-Chancellor of Sydney University and a member of the Australian Broadcasting Commission, left last week for a month in America, after which he will return to Australia *via* London.

Something to Learn

When I saw him, Dr. Wallace was full of enthusiasm over his reception at Broadcasting House, where every facility and enough literature to stock a library were placed at his disposal.

"I go away," he said, "with a good working knowledge of B.B.C. methods. We in Australia have a lot to learn from the B.B.C., but I hope that my Commission may be able to show the B.B.C. some day that it has something to learn from us."

Empire Emissaries

Dr. Wallace's latter remark was probably based on the suggestion that sooner or later the B.B.C. will send emissaries to Australia and other parts of the Empire to enable them to get not only broadcasting ideas, but first-hand information on what Empire listeners want from the B.B.C. in the way of programme material.

Such visits, however, are not likely to take place until the Empire transmissions are put on a more stable footing.

Contributions from the Empire?

It is now openly stated at Broadcasting House that a permanent Empire service may involve a contribution from different parts of the Empire.

Entertainment Department

AN Entertainment Department to take charge of vaudeville and similar broadcasts is to be established with Mr. Eric Maschwitz, now Editor of *The Radio Times*, as Director.

Mr. Maschwitz is expected to take over his new duties in May next.

The New Director

Anyone who has spent even a minute or two in the company of Mr. Maschwitz, or "Holt Marvell," will recognise that he is an Entertainment Department by himself. What will happen when he imbues a staff with his own irrepressible spirits I tremble to think.

Aspirants for Editorial Chair

Several B.B.C. aspirants for the editorship which Mr. Maschwitz is resigning have already made their applications, but I hear that the chances are not entirely in favour of a staff man. Certain people with journalistic attainments outside Broadcasting House are also being considered.

Mr. Sieveking

Mr. Lance Sieveking, who has been handling some of the vaudeville programmes, will probably find a berth in the Talks Branch.

An Unhappy Thriller

Edgar Allan Poe's thriller, "The Fall of the House of Usher," the broadcasting of which was postponed some months ago owing to the illness of the B.B.C. producer, Peter Creswell, has been restored to the National programme for March 9th, and will be given Regionally on March 10th. The microphone version is by Peter Creswell and Barbara Burnham. Mr. Creswell will be responsible for the production.

Dr. Bredow's Resignation

THE resignation of Dr. Hans Bredow from the post of German Radio Commissioner means the departure of one of the big figures in European broadcasting. It was Dr. Bredow who presented Sir John Reith with the stained-glass window, showing St. Cecilia, which now adorns the "D. G.'s" room at Broadcasting House.

The retiring Commissioner was responsible for the first German broadcasting organisation ten years ago.

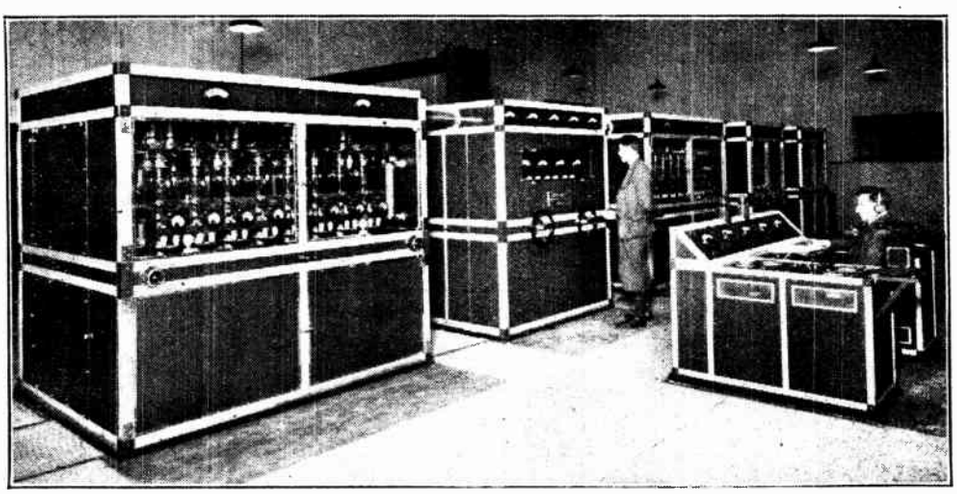
Sir John Reith's Unique Post

At no time, however, could it be said that Dr. Bredow wielded so much power as Sir John Reith, who seems to stand alone as a broadcasting "dictator," answerable only to a Board of visiting Governors.

M. Van Soust, who is Sir John's "opposite number" in Belgium, can perhaps claim similar authority. Messrs. Aylesworth and Paley, who are Presidents of the National and Columbia broadcasting systems respectively, are much in the same category as Managing Directors of limited liability companies.

A Hard-working Chief

In Italy the Managing Director of the Broadcasting Company—Signor Chiodelly—is also the Chief Engineer, so I imagine he has his hands full.



ANOTHER BIG VOICE. The transmitting hall of the new Marconi 60 kW. broadcasting station at Athlone, Irish Free State. The transmissions, which are heard at considerable strength throughout Great Britain, were inaugurated by Mr. De Valera on February 6th.

Majestic Superheterodyne

EARLSWOOD MODEL. TYPE 261B

A Seven-valve Receiver with Automatic Volume Control

A CONSIDERABLE amount of work has been done recently on both sides of the Atlantic in solving the special problems arising from the exceptional range and selectivity of superheterodyne receivers, and the Majestic range of receivers is illustrative of the advance that has been made in the matter of ease of control and reduction of heterodyne whistles.

The aerial circuit is somewhat unusual, and is designed to give uniform coupling over the long- and short-wave bands, and also to eliminate second-channel interference. The first object is achieved by a combination of inductive and capacity coupling (L1 and C1), and the second by feeding back a part of the amplified signal from the cathode return lead of the first H.F. valve through the coupling coil L2. The circuit constants are adjusted so that the feed-back tends to neutralise all incoming signals other than those to which the set is tuned.

Constancy of amplification over the tuning range is maintained in the coupling between the H.F. amplifier and the first detector by a combination of magnetic and capacitative coupling which takes the form of a few "dead-end" turns on the high-potential end of the transformer primary. These two stages, and also the I.F. amplifier, make use of the latest variable-mu screen-grid pentode valves, which are capable of a wide range of power-handling capacity without distortion.

The detector valve comprises a full-wave diode rectifier and a three-electrode amplifier in the same glass envelope. An adequate grid swing for the pentode output valve is thereby assured, with resistance-capacity coupling between the two stages.

Chassis Design

From the production and servicing point of view the chassis is a model design. The base is a one-piece pressing of exceptional rigidity, and can be lifted out of the cabinet after withdrawing the loud-speaker plug and detaching the control knobs without any fear of straining the wiring through warping of the chassis under the weight of the components. Special attention has been given to the question of constancy of performance under severe changes of climatic conditions. All coils, by-pass condensers, etc., are impregnated in special wax, and tests have shown that the set functions satisfactorily at a temperature of 115 deg. F. in an atmosphere of 90 per cent. humidity.

The handling of the controls should present not the least difficulty to a non-technical listener, provided that the importance of accurate tuning is realised at the outset. The quality of reproduction is the best indication of whether the set is exactly in tune with the station required, for the effect of the automatic volume control circuit is to cause a marked rise in pitch if the station is off tune by so much as the thickness of the shadow line on the indirectly illuminated scale. Actually the thickness of the shadow is about 10 k.c. on the scale, and as the latter is calibrated in kilocycles it represents approximately the band occupied by adjacent stations.

General.—*Table model seven-valve superheterodyne. Moving-coil loud speaker. Automatic volume control. New variable-mu screen grid pentode valves and diode-triode detector.*

Circuit.—*H.F. amplifier—1st det.—Oscillator—I.F. amplifier—2nd det.—Pentode—Power rectifier. Provision or pick-up and external loud speaker. Universal mains transformer 105 to 250 volts, 25 to 133 cycles.*

Controls.—*(1) Main tuning, calibrated in kilocycles. (2) Manual volume control (radio and gramo.), and on-off switch. (3) Wave-range and gramo. switch. (4) Tone control*

Price.—*26 guineas.*

Makers.—*The Majestic Electric Co., Ltd., Tariff Road, Tottenham, London, N.17.*

Of the range and sensitivity of the set there can be no question. During the course of an hour, on a 50ft. aerial five miles from Brookmans Park, no fewer than sixty-six stations were identified on the medium-wave range. In logging these stations none was recorded which suffered from serious heterodyne interference, and more than forty required generous use of the manual volume control to bring them down to a reasonable level for a living room. Heterodyning between stations is, of course, beyond the powers of the receiver to suppress, but heterodyne whistles generated within the set were found to be much fewer than in many superheterodyne receivers we have tested. For this happy result the ingenuity shown in the design of the aerial circuit is largely responsible.

Reception at a distance of five miles from Brookmans Park is a severe test of selectivity, even for a superheterodyne. With the Majestic, however, only one channel was lost on each side of the National and Regional transmitters. At a slightly greater distance from the high-powered stations 10 kc. selectivity could be confidently predicted at all parts of the tuning dial. Incidentally, the uniform sensitivity over both wave-ranges deserves special comment.

The action of the automatic volume control is flawless. But for slight differences in the level of background noise it would be difficult to estimate the relative powers of distant stations or to detect the presence of fading; and this clue is only available on very weak stations, for with the average Continental transmission the signal strength is sufficient to reduce background noise to the vanishing point. According to the makers, a 100:1 change in signal strength produces a change in volume of only 2:1. As a matter of interest, the effect was tried of tuning-in a station on a 3ft. length of wire attached to the aerial socket and then adding a 75ft. outdoor aerial. The change in volume was just noticeable, and was estimated at about 5 decibels.

Quality of Reproduction

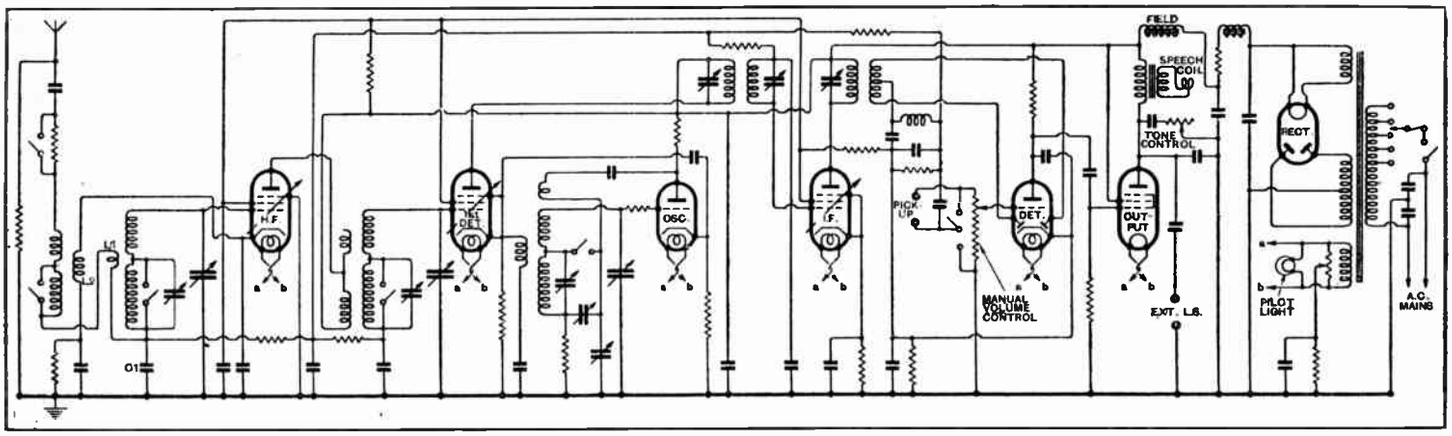
There is an ample reserve of volume and the predominating quality of reproduction is a full and round tone without any undue tendency towards an objectionable bass resonance. With the tone control in the "high" position there is just the required response in the treble to give good balance, and it should be necessary to make use of this control only in the few circumstances where low-pitched heterodyne whistles or background noises may make their presence felt.

Mains hum is rather high on first switching on the set, but soon subsides to an unobtrusive level when the valve heaters reach their normal temperature.

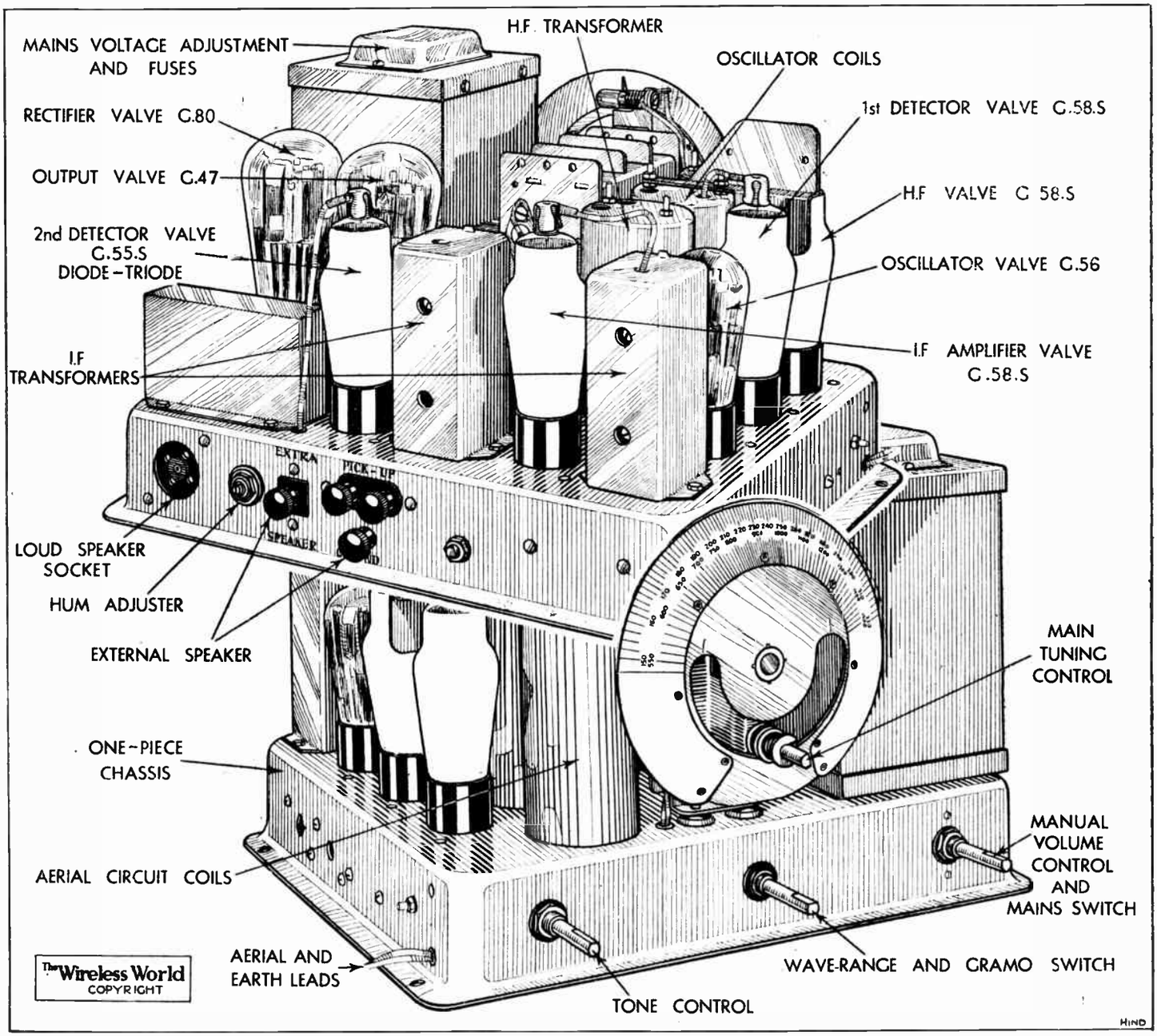
The proportions of the cabinet are dignified, and the polished walnut finish is in keeping with the general design.

The chassis illustrated is also available as the "Knightswood" table model in a cheaper cabinet at 24 guineas, while the 260-B chassis, with twin moving-coil loud speakers, is incorporated in the "Princewood" console receiver and the "Kingswood" radio-gramophone.

Screen-grid Pentode and Diode-triode Valves



The circuit diagram. The second detector stage couples the duties of a full-wave diode rectifier and a three-electrode amplifier in its function as an automatic control valve.



Mechanical rigidity and accessibility for adjustment and servicing have received special attention in designing the layout of the Majestic 260-A chassis.

Correspondence

The Editor does not hold himself responsible for the opinions of his correspondents

Correspondence should be addressed to the Editor, "The Wireless World," Dorset House, Tudor Street, E.C.4, and must be accompanied by the writer's name and address

What Does the Public Want?

THOSE of your readers who support "Diagnostic's" views appear to be themselves the principal victims of the "huge misunderstanding" to which "Diagnostic" refers.

If these readers have no interest outside their local receivers, then they have surely wasted their time and money on wireless sets, and deserve to be condemned to listen only through the medium of a relay service with no further choice of programmes for the future. Surely, too, it is a "huge misunderstanding" for these readers to be interested in any wireless paper, and one wonders how they came to see the letter by "Diagnostic" in *The Wireless World*.

The discussion resulting from "Diagnostic's" letter seems to me to resolve itself into the simple conclusion that, if "Diagnostic" is right, then the sooner broadcasting through the ether is abandoned as a huge mistake the better, and programmes communicated, instead, through the medium of the wired relay.

In conclusion, I would like to remind "Diagnostic" and his supporters that in the early days of broadcasting in this country, reception, even of the local home station, was generally vastly inferior to what is now obtainable from the majority of the Continental stations. Progress in transmitter efficiency and improvements in receivers, including automatic volume control, would seem to promise us a wonderful choice of programmes in the near future. If British manufacturers prefer to pay attention to "Diagnostic," there is no doubt that, between relay services and American receivers, the British public will still get what it wants. PROGNOSTIC.

London, W.9.

YOUR correspondent, "Diagnostic," has the B.B.C. complex. He assumes the right to judge for the majority, and accepts the view of a small minority as the basis of his judgment.

I have been the proud (sic) owner of a wireless receiver for just one month. It is sold by the maker as "a set for the man who wants essentially home stations." Fortunately, the maker is honest to modesty. The set brings in some eighty foreign stations. It is well it does, for had I to rely upon home-station programmes for the last month that set would now be permanently inoperative.

The question of quality of programme is for the individual and not for "Diagnostic."

Some people may see humour in the performance of the Yorkshire mummers.

Some people may like their politics doled out by the Government-controlled B.B.C. in the Professor Laski fashion.

Some may care for the personal expressions of opinion given out under the heading of news, and some may even consider the nerve-wracking, horrible specimens of dance music on drum and saxophone to be satisfactory.

But to me, even with such short experience of listening in, it's a blessing to be able to tick off my own programme in *The Wireless World*, and listen to what I want—or at least to be able to shut out what I don't want—without having to shut down.

As to quality of reproduction, well, it may be better from North Regional or Daventry than from, say, Rome or Budapesth. One would expect it to be.

But good-quality reproduction is merely an aggravation of bad music, and the majority of the relays from hotels and cinemas of jazz fall well within that category.

In my opinion, that is—and that's all that counts to me—or to anyone else.

Leeds. TENTATIVE.

THE letter of "Diagnostic" in your issue of January 27th seems to me to come as near to the truth as it is possible when a case is stated with the necessary vehemence to produce sparks from the contact of controversial hammer and anvil.

This letter is of peculiar interest to me, because just about a year ago I made my own similar views on distant reception the subject of an article in *The Observer*. The result was a correspondence in which there were two dissents and one agreement with my views.

I am assured by observers on the Continent that the position there is much as it is here. There is a kind of sub-opinion that local programmes are inferior to those from a distance; but most listening time is actually occupied by the local stations. With regard to British listeners any real knowledge of the amount of time devoted to distant listening is almost impossible to obtain, at any rate without an enormous referendum.

As one who is closely in touch with public opinion, I would say that your correspondent is wide of the mark in some particulars. There is, as he admits, a considerable interest in the foreign stations of the knob-twiddling kind; but there is also a considerable public which does take an intelligent interest in foreign programmes.

When your correspondent suggests that those with true musical appreciation cannot long be satisfied with reception from distant stations I absolutely agree with him, and my opinion is based on experience of a substantial kind with all sorts of receivers, commercial and otherwise, and ranging in initial cost from £10 to £100. The fact is that the public capable of appreciating real quality is a very small one. Service engineers of the big companies tell me that in the majority of cases where a tone control is supplied, it is set to give as thick and as treacly a quality as is possible. There is, however, a very large public which is what may be called semi-educated musically, and though the reproduction they hear disgusts the musician they get very real enjoyment, and because they are not musically educated the "something less" they get from distant stations is not distressing to them. Also, there is a very large public which is only satisfied with the most trivial, and that this public is powerful is evidenced by the Continental sponsored programmes which have a very large following in this country, particularly on Sundays.

To sum up; the B.B.C. programmes, particularly those which do not make use of long land-lines, are technically as good as any in the world; musically and educationally they are of a very high order. Reproduction approaching very nearly the original can be had from a local station only. This nearly natural reproduction presupposes very careful design in the reproducing instrument. The majority of commercial receivers give very good results; but in hardly any case do they give the best possible.

Apart from the large army of knob-twiddlers, there is a very real interest in foreign programmes which may be due to any one of a number of points of view. It is now too late to attempt the real musical education of the listening public. The B.B.C. has stultified its original educational endeavours by its insistence on the amusement to be had from distant listening, and our only hope lies in the gradual elimination of the electrical difficulties in distant listening which your correspondent so ably sets forth, and which *The Wireless World* has always acknowledged and done much to remove. ERNEST H. ROBINSON.

Woking.

AFTER ten years' listening to home and foreign stations, long, medium and short-wave, I most heartily agree with your correspondent that listening to home stations is the only real entertainment of an amusing and instructional character worth keeping the set on for.

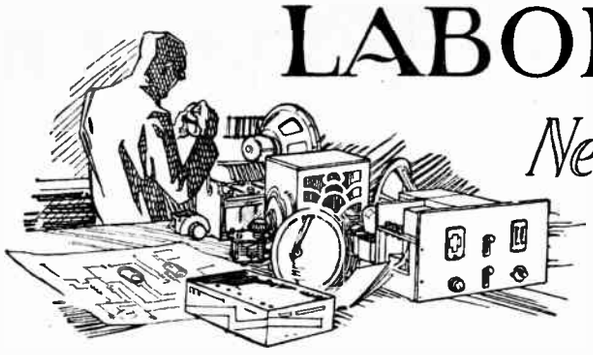
Being in the trade also, I agree that sets must be capable of receiving the "foreigners" in order to appeal to those people who get a little thrill out of listening to some language that they cannot in the least understand, and also to be a bit above the people next door, who can only get twenty stations, and who do not wish to compete in the style of the anglers who can "tell a few."

From your local stations you expect to get, and do get, programmes of good quality and at steady strength, and, moreover, 100 per cent. understandable. That is good wireless entertainment.

From the foreign stations, if they are not giving the usual long-winded jabber, you get a very poor alternative to the home stations when it comes to musical entertainment. This, of course, is speaking generally, and I agree that occasionally you find a foreign station worth listening to, but for a comparatively short time only.

That is why I prefer now to stick to the locals—in other words: "Support Home Stations, and keep out the Foreigners."

Shrewsbury. V. E. MORRIS.



LABORATORY TESTS

New Radio Products Reviewed

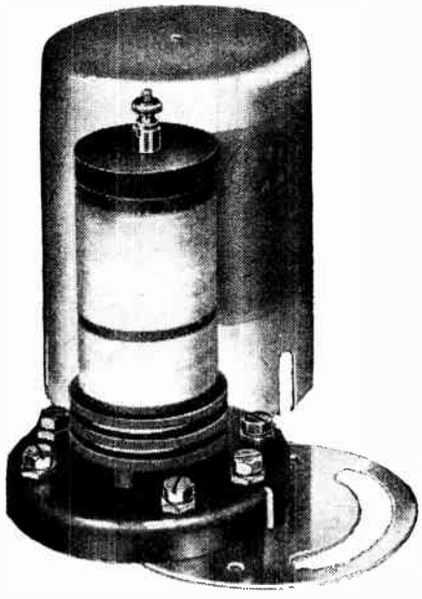
GOLTONE SCREENED COILS

THE new screened dual-range coils made by Ward and Goldstone, Ltd., Frederick Road, Pendleton, Manchester, are wound on 1¼in. formers and enclosed in aluminium cases measuring 3½in. in length and 2¾in. in diameter. In all there are five different types, and the windings have been chosen to suit the particular functions each coil is most suited to perform. No matter what the requirements may be there is a Goltone coil having well-proportioned windings and a suitable number of tappings for the purpose. Wave-change switches are not included, and these must be regarded as a separate item.

On test Goltone coils were found to compare very favourably with other coils of equivalent size and style; they are very efficient, and on the whole well above the average in performance.

The medium-wave winding has a measured inductance of 170 μH., so that when tuned with a 0.0005 mfd. condenser the waveband covered will be approximately 200 to 590 metres. The inductance of the long-wave section is 2,080 μH., which will give an effective wave-range of from 760 metres to just under 2,000 metres.

The price of these coils, including a small base screening plate, is 5s. 9d. each.



Goltone screened dual-range coil.

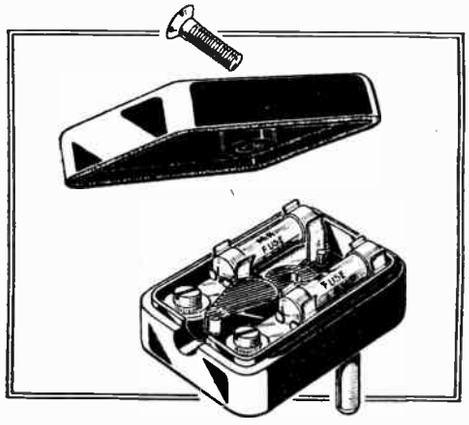
LOUD SPEAKER GRILLE FABRIC

A NEW style of fabric developed especially for covering the loud speaker fret has been placed on the market by the Pioneer Manufacturing Co., Cromwell House, Fulwood Place (High Holborn), London, W.C.1. Known as the Pioneer New Process Speaker Fabric, this material is so woven that it imposes the minimum impedance to the passage of sound waves, as the weave is of an exceedingly open nature. The standard colour is a light gold, but a darker shade is available if preferred. Despite the "openness" of the weave the fabric effectively obscures the loud speaker and the inside of the cabinet.

It is sold in cartons with the material rolled to prevent creasing, and a piece twelve inches square costs 1s. A 15in. × 15in. size is priced at 2s., and each carton contains a small tube of glue.

M.K. FUSE PLUG

THIS fuse plug has been designed to afford adequate protection to a mains-operated receiver, and is fitted to the end of the lead in place of the standard two-pin mains connector. The plug pins are the British Standard 5-amp. gauge, and therefore fit the normal type of wall socket installed for light electrical apparatus.



M.K. fuse plug fitted with two one-amp. fuses.

To avoid confusion with the ordinary mains plug the M.K. models are distinctive in shape, being rectangular in form and having the pins offset from the centre. Each model contains two small cartridge-type fuses—one in each supply lead—rated to "blow" at one amp. Fuses to give protection on two-amp. and five-amp. circuits are available also.

The makers are M.K. Electric, Ltd., Wakefield Street, Edmonton, London, N.18, and the price is 2s. in each case.

CORDO SCREENED H.F. CHOKES

SCREENED H.F. chokes particularly well suited for chassis mounting are now obtainable from Cordo Electrical Products, Ltd., 68, Victoria Street, Westminster, London, S.W.1. Two models are available known respectively as the Cordo Major and the Cordo Minor, the first mentioned having an inductance of 250,000 microhenrys. The inductance of the Minor is 150,000 microhenrys.

Samples of each type have been tested and found to be entirely satisfactory; their measured inductances are in close agreement with the makers' values, and, furthermore, the self-capacity is reasonably low in each case.

The two connections, which take the form of soldering tags, are located at opposite ends of the cylindrical container, so that one is well placed for above-deck wiring, while the other, passing through a clearance hole in the chassis, can be included in the under-deck wiring by a very short lead.

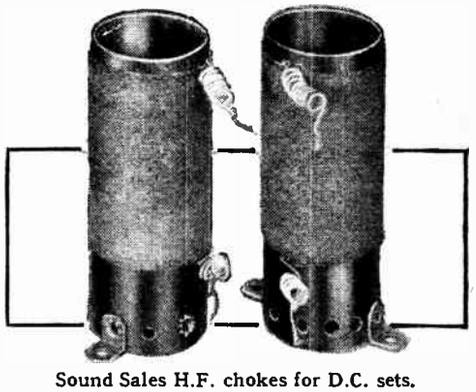
The Minor model costs 2s. 6d., and the price of the Major is 5s.

Cordo Major and Minor screened H.F. chokes.

MAINS H.F. CHOKES

A PAIR of H.F. chokes for inclusion in the mains leads of D.C. sets has been submitted for test by Messrs. Sound Sales, Ltd., of Tremlett Grove Works, Junction Road, Highgate, London, N.19. The chokes are wound to the specification given for the components employed in *The Wireless World* Monodial D.C. Super, and they function in an entirely satisfactory manner.

Each choke consists of a single-layer winding of cotton-covered wire on a cylindrical former, and the winding is impregnated to render it impervious to moisture. A good point is the inclusion of ventilation holes in the base of the former, so that there is free circulation of air. Mounting brackets are fitted, and the price is 3s. 6d. a pair.



Sound Sales H.F. chokes for D.C. sets.

o o o o

Catalogue Received.

Manufacturers Accessories Co. (1928), Ltd., 85, Great Eastern Street, London, E.C.2.—Ninety-six-page catalogue illustrating and describing the proprietary range of receivers, accessories and components handled by this well-known wholesale house.

READERS' PROBLEMS

Reducing Transferred Capacity

BEFORE single-knob tuning became general, stray capacity in parallel with the tuned circuits of a receiver seldom gave us cause for anxiety. But nowadays this subject has assumed some importance, and it is not always easy to cover the full medium-waveband with a ganged tuning condenser having the usual 0.0005mfd. sections.

A case in point is brought up by a reader, who submits for our examination a circuit diagram of a straightforward H.F.-det.-L.F. three-valve set. His complaint is that the trimming condenser across the tuned H.F. coupling circuit has to be set at minimum capacity, while both the other corresponding trimmers are practically "all in." It is realised that this state of affairs is brought about by excessive strays in the coupling circuit, and our advice is sought as to how they may be reduced in value.

The part of the circuit in question is reproduced in simplified form in Fig 1 (a). Tuned grid coupling is employed, the plate of the H.F. valve being connected through a feed condenser C3 directly to the high-potential end of the coupling inductance L.

Now the stray capacities across this circuit are bound to be fairly high; they will include, for instance, the self-capacity of the H.F. choke, represented by C1, and also the anode-cathode capacity of the screened grid valve (C2). To the sum of these capacities must also be added that of the wiring, which may well be quite considerable if a screened lead is employed for the H.F. anode connection.

As the aggregate value of all these capacities cannot be reduced beyond a certain value, the obvious thing to do is to try to avoid transferring them in their entirety to the tuned circuit, and in practice the simplest way of doing this is to "tap down" the anode connections to the tuning coil, as in Fig 1 (b). If we make a connection to the centre point of the coil, only one-quarter—and not one-half, as might be imagined—of the total capacities will be transferred. This plan is not likely to bring about any serious loss in magnification, and it will almost certainly confer an appreciable gain in selectivity.

It will be observed that, so far as long-wave reception is concerned, the anode connection to the tuned circuit is not "tapped down." To do this, it would be necessary to have a change-over switch in addition to the normal wave-range switch associated with the coil assembly. The absence of this refinement may not have any serious effect; stray capacities are seldom serious in their effects on the long waves, but the maintenance of accurate ganging may be doubtful unless it is added.

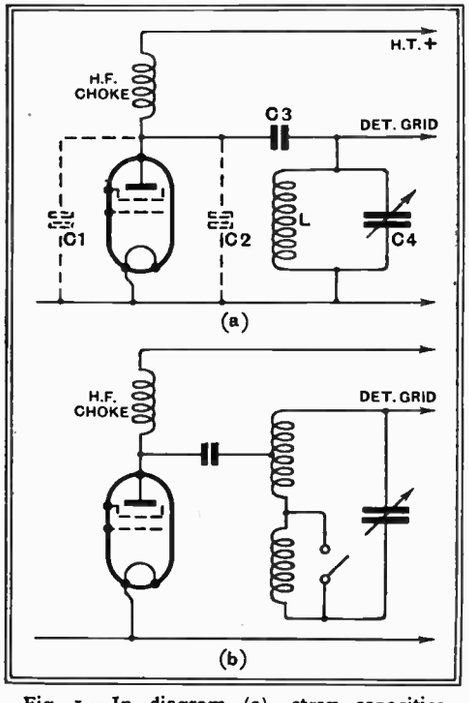


Fig. 1.—In diagram (a), stray capacities represented by C1 and C2 are transferred practically *in toto* to the tuned-grid coupling circuit. The proportion of transferred capacity is greatly reduced by adopting a tapped-down anode connection (diagram (b)).

THESE columns are reserved for the publication of matter of general interest arising out of problems submitted by our readers. Readers requiring an individual reply to their technical questions by post are referred to "The Wireless World" Information Bureau, of which brief particulars, with the fee charged, are to be found at the foot of this page.

The Simplest All-mains Set

ALTHOUGH A.C. mains have advantages over D.C. when the design of a fairly ambitious receiver is in question, it is a fact that the D.C. user scores heavily if his requirements are confined to the simplest form of set. Due to the fact that a rectifier is not needed, the main source of complexity and expense at once disappears.

It is easy to dispose of a question raised by a reader who wishes to construct the simplest possible all-mains D.C. set for temporary use at short range with headphones. We can refer him to a complete design for a single-valve set of this type, which appeared in our issue of March 11th, 1931. The circuit diagram of this set is reproduced in Fig. 2; a "mains aerial connection" is shown in dotted lines, but where more sensitivity is needed an external aerial could be added.

Without attempting to discuss the circuit in detail, it may be stated that it is intended for operation on supplies of between 200 and 250 volts; the single valve is of the general-purpose type designed primarily for battery feed, with a filament consuming 0.1 amp at 2 volts, and an ordinary electric lamp is employed to absorb the surplus mains voltage. For supplies between 200 and 220 volts, a 20-watt lamp will do, while for higher voltages of between 230 and 250 volts a 25-watt lamp should be substituted.

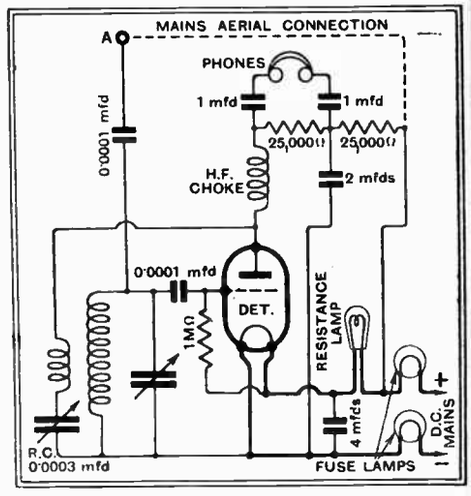


Fig. 2.—Power for nothing; the simplest possible all-mains set, with a voltage-reducing lamp which also provides illumination.

In order to combine safety with economy, the phones are fed through a resistance-capacity filter; another resistance-capacity arrangement is used for smoothing purposes, and will afford a sufficiently silent background on most mains supplies. Flash-lamp bulbs may be employed as safety fuses.

Microscopic Capacities

THE "top-end capacity" method of coupling a two-circuit tuner or band-pass filter is highly satisfactory, and, from the amateur point of view, has the special advantages of flexibility and cheapness. With this system the component circuits of the filter are linked together by a very small condenser joined between their high-potential ends. In order that the best coupling may be determined experimentally, it is usual for this condenser to be of the variable or semi-variable type.

It would appear to be necessary to stress the fact that the coupling condenser should be really small, and, most important of all, should have a low minimum capacity—not more than some 2 or 3 micro-microfarads. A maximum capacity in excess of 10 or 12 micro-microfarads is seldom needed. Further, it is a matter of some importance that the condenser should be wired in such a way that its connecting leads do not add appreciably to its minimum capacity; for instance, these leads should not be run close together and parallel to each other.

When correspondents who are using top-end coupling complain of broad and indefinite tuning, we always suspect that too much coupling capacity is being employed. This is almost certainly responsible for the troubles of a querist, who tells us that stations may be tuned in at two distinct settings, spaced by several degrees on the condenser dial. He is using a type of coupling condenser which we know to be suitable, and so we can only assume that the connecting leads are incorrectly arranged.

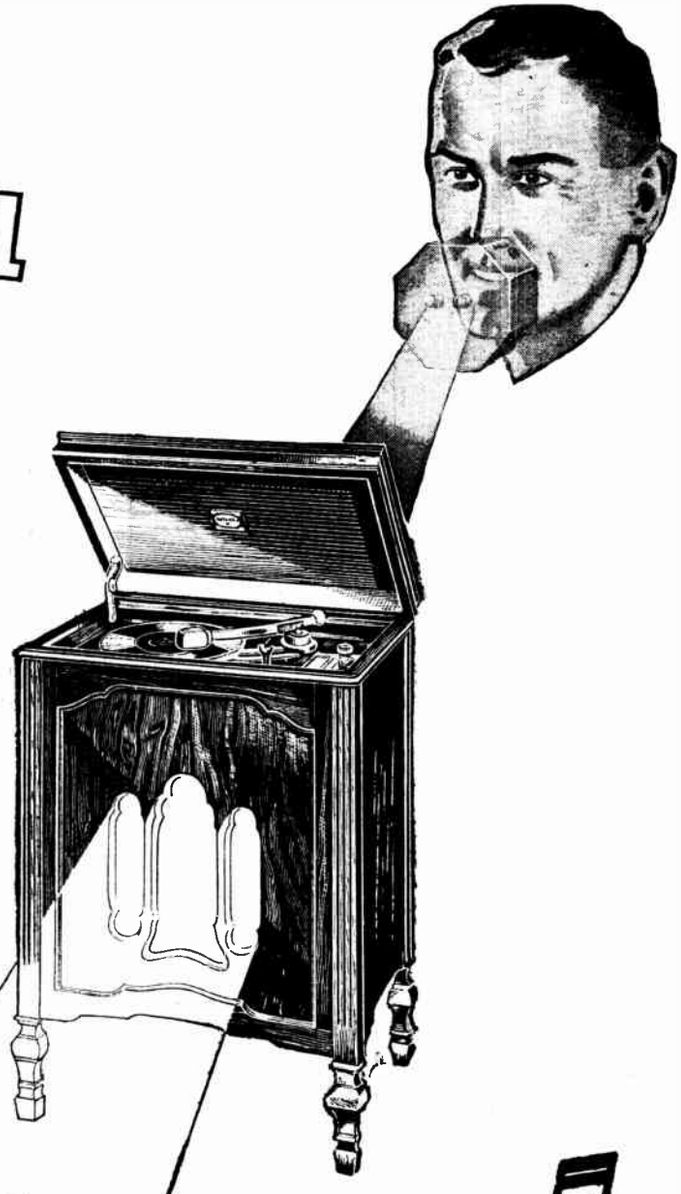
The Wireless World

INFORMATION BUREAU

THE service is intended primarily for readers meeting with difficulties in the construction, adjustment, operation, or maintenance of wireless receivers described in *The Wireless World*, or those of commercial design which from time to time are reviewed in the pages of *The Wireless World*. Every endeavour will be made to deal with queries on all wireless matters, provided that they are of such a nature that they can be dealt with satisfactorily in a letter.

Communications should be addressed to *The Wireless World* Information Bureau, Dorset House, Tudor Street, E.C.4, and must be accompanied by a remittance of 5s. to cover the cost of the service. The enquirer's name and address should be written in block letters at the top of all communications.

Get Original Tone



Tone means almost everything in your new set! You'll be hearing it every day for years, be sure at the start. Get the full benefit of Columbia's latest development in radio—ORIGINAL tone! We invite you to compare this wonderful new radiogram with any other. It will tell its own story. Try it at home. Its reception qualities will be fully demonstrated. Hear the greater beauty of your records. Note the floor cabinet of pleasant modern design in dark polished walnut. Let us send you complete particulars.

Columbia Radiograph Four

32 gns. cash. A.C. or D.C.

or delivered on first payment of

£3. 7s.

Columbia RADIO-GRAPHOPHONES

Use the COLUMBIA DEALER SERVICE

Expert advice on local radio conditions and service after sales.

CUT OUT AND POST TO-DAY!

Please send me fullest particulars of Columbia Model 620. (write in block capitals).

NAME .....

ADDRESS .....

.....W.Wld. 18/2/33.

Cut this out and post in an unsealed envelope bearing ½d. stamp to:—Columbia Graphophone Co., Ltd., 98, Clerkenwell Road, E.C.1.

MISCELLANEOUS ADVERTISEMENTS

NOTICES.

THE CHARGE FOR ADVERTISEMENTS in these columns is

12 words or less, 3/- and 3d. for every additional word.

Each paragraph is charged separately and name and address must be counted.

SERIES DISCOUNTS are allowed to Trade Advertisers as follows on orders for consecutive insertions, provided a contract is placed in advance, and in the absence of fresh instructions the entire "copy" is repeated from the previous issue: 13 consecutive insertions 5%; 26 consecutive, 10%; 52 consecutive, 15%.

ADVERTISEMENTS for these columns are accepted up to **FIRST POST** on **MONDAY MORNING** (previous to date of issue) at the Head Offices of "The Wireless World," Dorset House, Tudor Street, London, E.C.4, or on **SATURDAY MORNING** at the Branch Offices, 19, Hertford Street, Coventry; Guildhall Buildings, Navigation Street, Birmingham, 2; 260, Deansgate, Manchester, 3; 28a, Renfield Street, Glasgow, C.2.

Advertisements that arrive too late for a particular issue will automatically be inserted in the following issue unless accompanied by instructions to the contrary. All advertisements in this section must be strictly prepaid.

The proprietors retain the right to refuse or withdraw advertisements at their discretion.

Postal Orders and Cheques sent in payment for advertisements should be made payable to ILIFFE & SONS Ltd., and crossed & Co. Notes being untraceable if lost in transit should not be sent as remittances.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

Q.P.P.

CONVERSION KIT

By means of the PILOT Q.P.P. CONVERSION KIT you can readily and easily incorporate this revolutionary advance into your present battery set. Complete with full constructional details, copious notes on operation and FULL SIZE WORKING DIAGRAMS.

Cash or C.O.D. Carriage Paid.

42/6

or 8 monthly payments of 6/-
Meter, if required, 10/- extra.

Obtainable only direct from:—

PETO-SCOTT CO. LTD. 77, CITY RD. LONDON, E.C.1

Trade Charging

with our CHARGERS brings BIG PROFITS

We can offer 10 sizes and six Types to suit all requirements from the small man just starting to the big depot handling hundreds of cells at once. Send us particulars of your supply and requirements and we will make you a most tempting offer.

LESLIE DIXON SWITCHGEAR Co.
218, UPPER THAMES ST., E.C.4.

NUMBERED ADDRESSES.

For the convenience of private advertisers, letters may be addressed to numbers at "The Wireless World" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge, which must include the words Box 000, c/o "The Wireless World." All replies should be addressed to the Box number shown in the advertisement, c/o "The Wireless World," Dorset House, Tudor Street, London, E.C.4. *Readers who reply to Box No. advertisements are warned against sending remittance through the post except in registered envelopes: in all such cases the use of the Deposit System is recommended, and the envelope should be clearly marked "Deposit Department."*

DEPOSIT SYSTEM.

Readers who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Wireless World," both parties are advised of its receipt.

The time allowed for decision is three days, counting from receipt of goods, after which period, if buyer decides not to retain goods, they must be returned to sender. If a sale is effected, buyer instructs us to remit amount to seller, but if not, seller instructs us to return amount to depositor. Carriage is paid by the buyer, but in the event of no sale, and subject to there being no different arrangement between buyer and seller, each pays carriage one way. The seller takes the risk of loss or damage in transit, for which we take no responsibility. For all transactions up to £10, a deposit fee of 1/- is charged; on transactions over £10 and under £50, the fee is 2/6; over £50, 5/-. All deposit matters are dealt with at Dorset House, Tudor Street, London, E.C.4, and cheques and money orders should be made payable to Iliffe & Sons Limited.

SPECIAL NOTE.—Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post. When sending remittances direct to an advertiser, stamp for return should also be included for use in the event of the application proving unsuccessful.

RECEIVERS FOR SALE.

HIRE a McMichael Duplex Portable; 15/- weekly, £2/12/6 monthly; amplifiers for dances, etc., on hire.—Alexander Black, Wireless Consultant, 55, Ebury St., S.W.1. Sloane 1655 [0328

COLUMBIA Radio-Gram., model 302, cost 80 guineas, A.C. 200-250, perfect condition; £30.—J. C., 11, Garrick Close, Walton-on-Thames. [1805

PYE M.M., perfect order, little used; 8 guineas.—Stanley, Highcliffe, Hants. [1819

BURNDEPT Universal, S.G.5 valve, A.C. model, also Garrard electric motor, Burndept pick-up, in mahogany cabinet; £14; Dulwich.—Box 6048 c/o *The Wireless World*. [1816

AS New, £42 McMichael Twin Speaker, 3-valve A.C. Radio-Gram, 200/250 volts; £35, or nearest offer.—View Brabner, 100, Cheviot Rd., West Norwood, S.E.27. 'Phone: Streatham 4080. [1824

W.M. Super Senior Chassis, P. Pull, all valves and eliminator; £7/10.—E. H., 8, Hatherley Gardens, East Ham, E.6. [1827

OSTARGANZ Combined A.C. and D.C. Receiver, in modern walnut cabinet, with Rola M.C. loud-speaker, unboxed, list price £12/12, our price, 2 valves £5; 3 valves £6/10; c.o.d., carriage paid; state voltage.—Kay, 167, City Rd., Finsbury, E.C.1. [1632

"W.W." Band-Pass 3, battery model, with valves, £2/10; Celestion model S29 dual speaker, £3/10 (list £6).—Write, or call after 7.0 p.m., Roberts, 39, Homecroft Rd., S.E.26. [1844

OSRAM 4-valve Music Magnet, 1932, £5/10; Lissen Skyscraper, £2/10; Baker Perfect moving-coil speaker, £1/10; all working well.—Burgess, 26, Woodstock Rd., Oxford. [1835

APPLEBY'S, Central London Office, 46, Bloomsbury St., New Oxford St., London, W.C.1. Museum 8195. [1833

PURLEY RADIO Offers Haynes Quality Receiver, chassis complete with Hartley-Turner speaker, giving remarkable quality, 21 guineas; Experimental Quality Four, 7 watts, undistorted output, 16 guineas; hotted-up Osram Music Magnet Four, 1 watt output, 5 guineas; Pye battery, twintriple, as new, 8 guineas; Baird televisor, 5 guineas; also various H.T. eliminators and sets in good condition.—Purley Radio, Ltd., 18, Tudor Court, Purley. 'Phone: 1994. [1873

BRAND New Faraday All-wave Wireless, as advertised, 16-2,000 metres, customer unable to take delivery; list 27 guineas, sell £20.—Mayfair Radio, 31, George St., Hanover Sq., London, W.1. [1858

BRAND New Pye A.C. Model S, 6-valve Super Het., in makers' carton; cost 27 guineas, accept 20 guineas; owner bought Radiogram.—1, Nevill Crescent, Llandudno. [1884

PYE Twintriple A.C. Mains Transportables, new, boxed, carrying manufacturers' full guarantee; listed £29/8, price £14, cash, or c.o.d.—Forest Battery Service, Lydney, Glos. [1885

CHARGERS AND ELIMINATORS.

TANTALUM for A.C. Chargers, H.T. and L.T.—Blackwell's Metallurgical Works, Ltd., Garston, Liverpool. [9346

A.C. Charging Boards (bankrupt stock), output 40v. 6a., valve rectification; cost £25, £8/5.—Jersey, Cumnor Hill, Oxford. [1715

SCOTT SESSIONS
and the
"WIRELESS WORLD"
MODERN "A.C." QUALITY AMPLIFIER
(Described in this issue).

A big demand is anticipated for this very excellent A.C. Amplifier. Scott Sessions have arranged to supply these completely assembled with finest workmanship throughout for

(inclusive of Royalty, fully tested with Valves, Scott Sessions-Guaranteed Mains Transformer and Chokes, Motor, Pick-Up, etc., etc., but excluding Cabinet and Speaker, which will be quoted extra to customer's exact requirements).

£22.0.0

Please state voltage and periodicity when ordering, as with the previous "Wireless World" A.C. Amplifier designs many orders are expected from the Colonies, etc., and special arrangements have been made for Export Packing to ensure these instruments arriving in perfect condition.

FOR OVERSEAS ORDERS.
One third to one half value may be sent with order and balance (including freightage) will be collected on delivery.

Insurance effected if required.

Repairs and overhauls made to all "Wireless World" Sets. "Wireless World" and special sets constructed with finest workmanship. Send us your requirements now.

SCOTT SESSIONS & CO.
RADIO ENGINEERS,
MUSWELL HILL, LONDON, N.10
Telephone No.: Tudor 5326.

Contractors to H.M. Government Departments, Crown Agents for the Colonies, Electricity Corporations, etc.

Chargers and Eliminators.—Contd.

AITKEN BROS. and Co., 7, Gallowgate, Newcastle-on-Tyne.—Makers of really good transformers and chokes. Finest Materials. Experienced Craftsmen. Guaranteed for two years. Quotation for one of any type or specification on application. Satisfaction guaranteed. Enquiries invited. [1691

CLIMAX A.C. Eliminator, 200v. 40 m.a., nearly new; 2 guineas.—Wilmot, "Westholme," Breaston, Derbys. [1820

TRICKLE Chargers, ½ amp., with Westinghouse Rectifiers, complete, 11/9; 1¼ amp., 19/11; eliminators, 20 m.a., 34/6; particulars free.—Arden Agency, Wollaston, Wellingborough. [1818

N.P. for Battery Chargers from A.C. Mains; trade lists and photographs; stamp.

N.P.—Senior One will charge 1 to 11×2 volt cells up to 2 amps., variable resistance and ammeter; 75/-.

N.P.—Chargers, fitted with Westinghouse metal rectifiers, 2 and 3 circuits, for A.C. mains; from £6/12/6; trade.

N.P.—Valve charger for A.C. mains, 65/-; will do up to 11×2 volt cells variable to 1.3 amps.

N.P. for D.C. Battery Charging Boards; from 25/-; let us have your requirements; we will give you a keen price.

N.P. for H.T. and L.T. Battery Chargers for A.C. Mains; state what you require to get a keen price to do your charging; stamp.

N.P.—Send trade lists and photographs for 1933; stamp —Nash Products, Ltd., Stechford, Birmingham. [1826

BROWN and SALTER, Vortexion, Wimbledon, for the finest transformers made regardless of price; all models guaranteed 12 months, tested on full load and 2,000 volts between windings before despatch; all finished in cast aluminium frames or shroudings.

VORTEXION Model Specified for the Modern A.C. Quality Amplifier, 400-0-400, 110 milliamps, 4v. 3a C.T., 4v 2a., 4v. 1a. C.T., any input, 50c., insulated terminal type; 24/-.

VORTEXION.—W5, 6 or 7 for Westinghouse H.T.5, 6, or 7, with 4v., 1.4a., C.T.; 11/6.

VORTEXION.—W8, 9 or 10 for Westinghouse H.T.8, 9, or 10, with 4v. 1·2a., C.T., 4v. 2·5a., tagged leads, shrouded; 16/6.

VORTEXION.—W11 for Westinghouse H.T.11, with 4v, 1·2, 4v 1·6a., all C.T., shrouded; 40/-.

VORTEXION.—250-0-250, 60 m.a., 4v. 1·2, 4v. 2·4a., all C.T., open type tagged leads; 11/6.

VORTEXION.—350-0-350, 75 m.a., 4v. 1·2, 4v. 2·4a., all C.T., open type tagged leads; 13/6.

VORTEXION.—350-0-350, 120 m.a., 4v. 2·5, 4v. 1·5, 4v. 2·4, all C.T., shrouded type tagged leads; 16/6.

VORTEXION.—400-0-400 or 450 or 500-0-500, 120 m.a., open types, 4v. 2·4a., 4v. 2·5a., 4v. 2·5a., all C.T.; 19/-; tagged leads.

VORTEXION.—500-0-500, 150 m.a., or 450-0-450, 160 m.a., or 400-0-400, 190 m.a., 4v. 2·5a., 4v. 4a., 4v. 2a., 4v. 2a., 4v. 2a., all centre tipped, any input, 50 C., beautifully shrouded, core size, 2¼×3¼, screened primary and strips, a £5 model, 35/-.

VORTEXION.—30h. 50 m.a. chokes, 5/6; 20h. 120 m.a., 8/6; 15h. 350 m.a., excellent for rough D.C., shrouded, 15/-.

VORTEXION for Helsby Condensers, 750 D.C. working, 6 mfd.; 6/6, list price 21/6.

VORTEXION.—Transformers made to your specification.

VORTEXION.—Brown and Salter, 182, The Broadway, Wimbledon. Tel.: Liberty 2814. [1812

Chargers and Eliminators.—Contd.

MAINS Transformers, by well known manufacturer, guaranteed brand new and tested on full load before despatch, finish in cast aluminium frames, connections to terminals or tags; 250-0-250v. 75 m.a., 4v. 4a. C.T., 4v. 4a. C.T., 15/-; 350-0-350 75 m.a., 4v. 4a. C.T., 4v. 2a. C.T., 20/-; 330-0-330 100 m.a., 4v. 8a. C.T., 4v. 4a. C.T., 19/6; any transformer made to your specification.—Cabaret Electric Co., 182, Vauxhall Bridge Rd., Westminster, S.W.1. [1823

SOUTHERN RADIO Beg to Announce that Owing to a Considerable Increase in Sales of Mains Transformers and Chokes, they are able to reduce all prices, as production cost is appreciably reduced by increased turnover. All transformers and chokes are guaranteed for 12 months.

MAINS Transformers, fully tapped, primary 200-250v. 50 cycles, centre tapped L.T., 250-0-250, 60 m.a., 4 volts 1 amp., 4 volts 3 amps., 10/3, carriage paid: 350-0-350, 60 m.a., 4 volts 2 amps, 4 volts 4 amps., 12/3, carriage paid; 350-0-350, 120 m.a., 4 volts 1 amp., 4 volts 2 amps, 4 volts 4 amps, 16/9, carriage paid; 450-0-450, 120 m.a., 4 volts 2-5 amps., 4 volts 4 amps., 4 volts 2 amps., 18/9, carriage paid; 500-0-500, 120 m.a., 4 volts 5 amps, 20/-, carriage paid.

TRANSFORMERS for Westinghouse Rectifiers, H.T.4, 5, 6 or 7, 12/-, carriage paid; H.T.8 or 9, 13/9, carriage paid.

SMOOTHING Chokes, 40 henries 40 m.a., 700 ohms, 6/-, carriage paid; 20 henries 60 m.a., 480 ohms, 7/-, carriage paid; 15 henries 100 m.a., 330 ohms, 8/-, carriage paid; 20 henries, 120 m.a., 270 ohms, 8/6, carriage paid; special transformers and chokes quoted for and delivery given within 3 days from receipt of order; all guaranteed for 12 months, and carriage paid.—Southern Radio, 323, Euston Rd., London, N.W.1 (near Warren St. Tube). 'Phone: Museum 6324. [1861

REWARD!!!—Better quality if you use my eliminators, because outputs are to your exact requirements, smooth and humless; all work guaranteed 2 years; example:—

O!!!!—Tapped inputs, outputs 350v. (smoothed), 80 m.a., 4v. 3-6 amps., c.t., battleship built chassis job, valvular rectification, all finest material, with big safety factor; 47/6.

O!!!!—Ditto, 500v. 100 m.a., and 4v. 3-5 amps., 4v. 2 amps., c.t.; 67/6; 'phone, write, or call; I shall be interested to discuss your peculiar requirements.

O!!!!—Built by Englishman who knows his job.—R. A. Arnell, address under Speakers classification. [1878

SERADEX All-British Radio.

MODERN A.C. Quality Amplifier, for best results use the following Seradex equipment.

SERADEX Mains Transformer, as specified, screened primary, terminal type, £2/5; stripped type, £1/19/6.

SERADEX Output Choke, type C.A., 20h., 100 m.a. constant; 12/6; 2 needed.

SERADEX 10-watt Resistances, 3,000 ohms; 2/6; other values on application.

SET 5 1½-watt Resistor, values as specified, 3/4; 5-watt 500 ohms, 1/3.

SERADEX Filter Condensers, type B, 400v. D.C. working, non-inductive, 1 mfd., 1/6; 2 mfd., 2/3; 4 mfd., 4/5; 4×4 mfd., 7/3; 8×8 mfd., 14/6; 1 mfd. tubular, 400v. working, 8d. each; illustrated lists for stamp.

SERADEX Battery Chargers and Rectifying Units; lists now ready.

SERADEX Meters for your Q.P.P. Outfit; see advert. on page 20; lists for stamp.

TREVOR PEPPER, Wake Green Rd., Birmingham, 13. [1836

CABINETS.

RADIO-GRAM Cabinets; fully illustrated list free; remarkable values.—Gilbert, Cabinet Maker, Swindon. [1686

RADIO Cabinets Made to Your Own Design; estimates free.—Crabtree, Thistle Hill, Kirkheaton, Huddersfield. [1769

CLEARANCE Lines in Cabinets for Radiograms, mains or battery sets, loud-speakers, gramophones, etc., endless variety, lowest prices (no catalogues).

H. L. SMITH and Co., Ltd., 287-9, Edgware Rd., W., or at associated shops: Charles and Co., 27, Lewisham High Rd.; Burt and Co., 49, Broadway, Deptford; Wright and Co., 367, High St., Stratford; G. E. Smith, 25, Queen's Rd., Watford. [1773

WE Can Supply Brand New Complete Gramophones, London made cabinets, at less than the cost of cabinets; ideal for converting to radiograms; 28 models to choose from; 52/6 to £10; illustrated list free.—Radley's, Ltd., Canal Rd., Bradford. [1786

RADIO Surplus and Bankrupt Stock; long list for stamp; save you pounds; for example, Westinghouse rectified eliminator, 200v. 30 m.a. (in case), with 3 lower tappings, unused, £1/18/6; or with L.T., £2/2.—All goods fully guaranteed by Trevor Pepper, Wake Green Rd., Birmingham. [1838

BRAND New Massive Walnut Cabinet, fitted with Garrard record changer (1933), take chassis 36×18, cost £31, sell £17; R.G. cabinet, lime oak, cost £10, sell £3/10. —Mayfair Radio, 31, George St., Hanover Sq., London, W.1. [1859

DYNAMOS, ETC.

1933 M.L. Rotatory Converter, input 220 D.C., output 230 A.C., 85 watts.—Particulars, demonstration, 333, Green Lanes, Harringay. [1849

CANNINGS 6v. 50 amp. Charging or Plating Dynamo; bargain, £5; exchange good components.—Pearson, 29, Midland Rd., Winton, Bournemouth. [1874

GRAMOPHONES, PICK-UPS, ETC.

PICK-UP, B.T.H. Minor, 19/6; Paillard A.C. motor, 29/6.—Murray, 53, Lauderdale Gardens, Hyndland, Glasgow [1881

MARCONIPHONE Latest Pick-up, 33/-; B.T.H. (with V.C.), 32/-; both brand new.—Aldridge, 29, Chatterton Rd., Finsbury Park, N.4. [1888

AD-A-GRAM (see "Wireless World," February 3rd, page 87), A.C. model, unboxed, cost £5/19/6, must sell; £3/19/6.—Taylor, 117, North End Rd., West Kensington, London. [1886

FOR EVERY SET—*there's a*

PILOT AUTHOR KIT

CASH—C.O.D.—or H.P.

MODERN A.C. QUALITY AMPLIFIER

KIT "A" Kit of specified parts including ***Plymax Chassis Ready Drilled and Assembled,*** and PETO-SCOTT Metal Cowl, but less Valves, Cabinet, Gramophone Motor and Pick-up. Set of specified Valves **£2-18-6**

CASH or C.O.D. Carriage Paid **£10-14-0** or 12 monthly payments of **19/7**

KIT-BITS *Selected C.O.D. Items. You pay the postman, we pay post charges on orders value over 10/-*

1 Savage Mains Transformer, Type M.G.A.... ... **£2-0-0**
1 Savage "Massicore" Output Choke, Type L.34... **15-0**
1 Multitone "Toco" L.F. Transformer, 4 : 1, with graded Potentiometer **£1-1-0**
1 British Radiophone combined 100,000 ohms Potentiometer and Mains Switch, Type 484... **10-6**
1 Ediswan D.L.S. Thermal Delay Switch **7-6**
1 Marconiphone Pick-up **£2-2-0**
1 B.T.H. Truspeed Gramophone Motor **£2-9-6**

Exclusively Specified

PETO-SCOTT MODERN A.C. QUALITY AMPLIFIER CABINET

Constructed of Solid Oak, hand French polished and beautifully finished, ready to take this latest "Wireless World" Amplifier. EXCLUSIVELY SPECIFIED BY THE DESIGNERS. CASH or C.O.D. Carriage Paid ... **59/6**

Peto-Scott Plymax Baseboard 18"×9"×1½" ... **9/6**
Peto-Scott Metal Cowl. As specified ... **7/9**

QUIESCENT PUSH-PULL TWO

KIT "A" Author's Kit of specified parts, including ***Ready Drilled Panel and Assembled Baseboard,*** but less Valves, Cabinet, Meter and Speaker.

CASH or C.O.D. Carriage Paid **£3-9-0** *or 12 monthly payments of* **6/4**

ACCESSORIES.

1 Sifam Moving Iron Milliammeter, E.66 - - - **10-0**
1 Celestion Q.P.P. 19A Loudspeaker with Transformer - - - - - - - - - **£2-10-0**

Specify if Panel is required drilled to take Meter when ordering.

KIT "B" As Kit "A," but with Valves less Cabinet, Meter and Speaker. CASH or C.O.D. Carriage Paid. **£5-11-0** *or 12 monthly payments of* **10/3**

KIT "C" As Kit "A," but complete with Valves and Cabinet (less Speaker and Meter). CASH or C.O.D. Carriage Paid. **£6-3-6** *or 12 monthly payments of* **11/4**

If Sifam Meter is required add 10 - to Cash Prices or 11d. to each monthly payment.

ALL-WAVE MONODIAL

KIT "A" Author's Kit of specified components including ***Ready Drilled polished Oak Ply Panel, and ready drilled and assembled baseboard,*** but less Valves and Cabinet.

CASH or C.O.D. Carriage Paid. **£12-1-0** or deposit £2-1-0 and 11 monthly payments of £1-0-0.

KIT "B" As Kit "A" but with Valves. Cash or C.O.D. Carriage Paid ..... **£16-18-6** or £2-18-6 deposit and 11 monthly payments of £1-8-0

QUIESCENT PUSH-PULL PARTS

FERRANTI Type AF12C Push-Pull Input Transformer **15/-**
FERRANTI Type OPM12C Push-Pull Output Transformer **15/-**
R.I. Quiescent Push-Pull Input Transformer **16/6**
R.I. Quiescent Push-Pull Output Choke... ... ... **12/6**
SOUND SALES Push-Pull Input Transformer **16/6**
SOUND SALES Push-Pull Output Choke **15/-**
VARLEY Type DP36 Push-Pull Input Transformer ... **17/6**
VARLEY Type DP37 Push-Pull Output Transchoke ... **18/6**
*Above Prices include ¼ Royalty.

PETO-SCOTT CO. LTD. 77, CITY RD. LONDON, E.C.1

LOUD-SPEAKERS.

B.T.H. R.K. Moving Coil Speakers, guaranteed new, unused, manufacturers' surplus, original price 6 guineas.

HIGHLY Sensitive and Wonderful Tone Response; will handle up to 10 watts output; available for 6v., 100v., 200v., 30/-; also A.C. models, £2/10.

CARRIAGE Paid, c.o.d., or cash with order; send for list of other unused bargains.—Seekamp, 46, Farringdon St., London, E.C.4. [1425

EPOCH 99 De Luxe P.M., perfect; £4, or nearest offer. —Chicas, 254, Trinity Rd., S.W.19. [1834

O!!!!—Magnavox speaker, one only, Magna model (English), 7in. cone, 2,500 field, transformer, etc., slightly soiled; 31 6.

O!!!!—Ditto, Magna type, 9in. cone, 2,500 field, transformer, etc., remarkable bargain, 41/6; dual compensated pair, 42/6; enquiries.

O!!!!—Also a W.B. and a Lamplugh, energised, both 2,500, with transformers, at 14/6 each; used for comparison tests.

O!!!!—See eliminator advert.—R. A. Arnell, 8, Fishponds Rd., Upper Tooting, S.W.17. Streatham 8209. See last advert. for other types. [1877

RADIO Surplus and Bankrupt Stock; long list for stamp; save you pounds; for example, Westinghouse rectified eliminator, 200v. 30 m.a. (in case), with 3 lower tappings, unused, £1/18/6; or with L.T., £2/2. All goods fully guaranteed by Trevor Pepper, Wake Green Rd., Birmingham. [1839

30/-!!—B.T.H. R.K. moving coil speakers, 6in. cone, new and unused, guaranteed; these speakers are type as used in cinema sound equipment; weight 30lb., and are vastly superior to cheap speakers now on the market 100 volts, 150 volts, and 200 volts D.C.

27/6!!—6v. D.C. speaker, as above; £2/7/6, speaker as above, for 100-250 A.C.

17/6.—British Radiophone 3-gang condensers, unused; carriage paid, cash with order, or c.o.d.—Ward, 12, Tredegar Rd., Bow, E.3. [1872

EARL 6,500 ohm Field (200-240v.) Pentode Transformer, 15/-; Earl Dual, as above, other field, P.M., 37/-; used test only.—55, Teddington Park Rd., Teddington, Middlesex. [1863

PICTURE RECEIVER APPARATUS.

TELEVISION.—All necessary components supplied; lists free; handbook on television free with all complete kits.—John Salter, Member Television Society, Featherstone Buildings, Holborn, W.C. [1736

BAIRD Flat Plate Neon, unused; 15/-.—Button, Richmond Av., Breaston, Derby. [1868

VALVES.

TRANSMITTING or Amplifying Valves, 50-watt 1,000-volt Western Electric; £1; carriage paid.—Hooke, G5XH, 104, North End, Croydon, Surrey. [1852

VALVES, as new, emission guaranteed.—Mazda, A.C./P.E.N., 12/-; A.C./S.G., 9/-; A.C./P1, 9/-; A.C./H.E., A.C. 2H.L., 8/-; U.65 550, 7/-; Osram D.P.T., 12/-; D.S.B., U.S., V.D.S., 10/6; P.T.2, 9/-; H210, H.L.210, 4/9; Mullard P.M.12, 9/-; P.M.22A, 9/-; P.M.2A, 5/6; Cossor 215S.G., 220S.G., 9/-; pair dual matched speakers, Rola, with multi ratio transformer, as new, 43/-.—J. F. Anderson, 35, Landsdowne Rd., Walthamstow, E.17. [1845

RADIO Surplus and Bankrupt Stock; long list for stamp; save you pounds; for example, Westinghouse rectified eliminator, 200v. 30 m.a. (in case), with 3 lower tappings, unused, £1/18/6; or with L.T., £2/2.—All goods fully guaranteed by Trevor Pepper, Wake Green Rd., Birmingham. [1837

NEW Large Purchase of a Set Manufacturer's' Stock of Valves, guaranteed as new, all latest types, and any valve differing from the maker's characteristic exchanged free.

2,000 H.L.s, 210H.F.s, 210L.F.s, P.M.1H.F.s, P.M.1L.F.s, H.L.210s, H.210s, D.E.H.210s, L210s, 3/9; 215P.s, 220P.s, L.P.2s, P.215s, D.E.P.215s, P.M.2s, P.220s, special, matched P.M.2A, for Quiescent push-pull, 12/- pair; D.H.s, 41M.H.L.s, 41M.H.s, M.H.4s, A.C./H.L.s, A.C./2H.L.s, 354V.s, 904V.s, D.C./3H.L., 7/-; 41M.P.s, M.L.4s, A.C./P.s, 7/6; P.T.4, P.T.41, P.E.N.4V., M.P./P.E.N.s, 12/-; latest metallised S.4V.B.s, M.S.4B.s, M.S.G./H.A., A.C./S.G.s, 9/-; Cossor M.V.S.G., 12/-; 442B.V., 1807s, 7/9; 1821s, 7/-; 620T., 15/-.

2,000 Valves are Always in Stock for Immediate Dispatch, prompt attention, for cash or c.o.d.—Newman, 309, Roman Rd., E.3. [1659

THE Following Valves are Guaranteed as New, and any valve differing from the makers' characteristics will be exchanged; all latest types.

A.C./Pen.s, A.C.S1/V.M.s, M.P.T.4s, D.C.2/Pen.s, D.C.2S.G./V.Ms, 11/-; MS4s, M.S.4B.s, A.C.S.G.s, S.4V.A.s, D.S.B.s, A.C.S./2s, D.C.2/S.G.s, 9/6.

M.L.4s, A.C.P.s, 41M.P.s, P.M.24s, 8/-; A.C.H.L.s, A.C.2/H.L.s, 354V.s, 41M.H.L.s, U.10s, U.U.60/25Gs, M.H.4s, 7/6; P.T.2s, V.S.2s, 215S.G.s, 9/-; D.C.3H.L.s, 8/-.

ALL Types of Brand new American Valves in Stock; 247s, 235s, 224s, 236s, 237s, 12/-; 227s, 226s, 280s, 245s, 232s, 10/6.

UX.250s, 7 watts output, 16/-; 282M. mercury vapour rectifiers, 11/-; carriage paid, cash with order or c.o.d.

FOR Quickest Delivery Send Telegraph Money Order.—Ward, 12, Tredegar Rd., Bow, E.3. [1871

WIRE.

ODD Weight Reels New Wire, clearance price; ebonite tube, odd lengths, cheap.

SPECIAL Offer!—No. 4 stampings, 4/6 gross; bobbins, 1/-.—Frost Radio, 21, Red Lion St., E.C.1. [1870

COMPONENTS, ETC., FOR SALE.

WESTON Moving Coil Milliammeters (301), 0.15 upwards, 22/6; Turner ditto, 17/6; Turner thermo couple ammeters, 0-1.5, 25/-; 3-range moving coil meters, 0-3 m.a., 6 and 120 volts, 22/6; electrostatic and moving coil voltmeters, 0-2,000, 32/6; moving coil milliammeters, 0-10 upwards, 10/6; alterations and repairs of every description.—The Victa Electrical Co., 47, High St., Battersea, S.W.11. [0355

SHORT Wave Condensers, Utility, 0.0002, micro-dials; cheap.—25, Stainton Rd., Sheffield. [1822

Components, etc., for Sale.—Contd.

PREMIER SUPPLY STORES Offer the Following Brand New Goods at a Fraction of the Original Price; all goods guaranteed perfect; carriage paid over 5/-, under 5/- postage 6d. extra. (Ireland carriage forward.)

PREMIER.—Mains transformers, all guaranteed, terminal connections, 200-250 input 40-100 cycles, output 135 volts at 80 m.a. for voltage doubling, 8/6; 4 volts 4 amps. C.T. low tension, 2/- extra; Westinghouse rectifier for above, 180v. 30 m.a., 8/6.

MAINS Transformers, primary 200-240 volts, secondary 350-0-350 volts at 90 milliamps., 4 volts at 3 amps. (C.T.), 4 volts at 2 amps (C.T.), 12/6.

AMPLION Transformers, input 100-250 volts, output 350+350 volts, 120 milliamps., 4 volts at 5 amps., 4 volts at 2 amps., 6 volts at 1 amp, all centre tapped; 17/6.

MAINS Transformers, 12 volts 1 amp., 7/6; 9 volts 1 amp., 7/6; 4 volts 4 amps. and 4 volts 2 amps., 8/6; 14 volts 4 amps., 12/6; 4 volts 3 amps., 7/6; 4 volts 5 amps., 8/6; 6 volts 2 amps., 7/6; 10 volts 3 amps., 10/-; 22v. 1a., 10/-.

H.T.9 Transformer, 230 volts 200 milliamps., with 4 volts 4 amps. (C.T.) winding; 15/- (with screened primary).

H.T.8 Transformer, with 4 volts 3-5 amps. low tension C.T., 15/-; with Westinghouse H.T.8 rectifier, 27/6 (with screened primary).

MAINS Transformers, output 250-0-250 volts at 60 milliamps., 4 volts at 1 amp., 4 volts at 2 amps., 4 volts 3-4 amps., all centre tapped; 15/- (with screened primary).

MULTI-RATIO Output Transformers, 15 different ratios, 7/6; Pye Chokes, 20 or 32 henrys, 4/-.

PREMIER Chokes 40 milliamps. 25 henrys, 4/-; 65 milliamps. 30 henrys, 6/-; 150 milliamps 30 henrys, 10/6; Pentode output chokes, tapped, 7/6.

SMOOTHING Chokes for Series Connected Filaments from D.C. mains, carry 1 amp.; 7/6.

KOLSTER-BRANDES 80 milliamp. 30-henry Chokes, tapped 1/3 and 2/3, 7/6.

T.C.C. Condenser, 2 mfd. 750 volts working, 4/-; 4 mfd. 750 volts working, 6/-, 4 mfd. 400 volts working, 4/-; 4 mfd. Electrolytic, 440 volts working, 4/-; 8 mfd., 4/6.

T.C.C. Block Condensers, 250 volts working, 8+2+2+1+1 mfd., 5/6; 375 volts working, 1+1+0.1+0.1+0.1+0.1+0.1+0.1 mfd., 2/-; 375 volts working, 6+4+2+2+2 mfd., 10/-; 250 volts working, 2+2+2+2+1 mfd., 5/6.

WESTERN ELECTRIC, 0.01+0.01 mfd., 400 volts working, 1/-; blocks 4+2+2+2+1+0.09 mfd., 400 volts working, 6/-.

FERRANTI Condenser Blocks, 300 volts working, 4+4+2+2 mfd., 10/-; all entirely separate.

VARIABLE Condensers, Polar, 3-gang tube type, fully screened, split end vanes and disc drive, 0.0005, 12/6.

ORMOND All-brass 2-gang Condensers, semi shielded, 0.0005, 5/-; Ormond all-brass 0.0005 slow-motion condensers, with knob and dial, 3/6; Polar 0.005 and 0.00035, Bakelite Dielectric condensers, with knob, 1/-.

PREMIER Eliminators, input 200-250 A.C., 40-100 cycles, output 250 volts at 60 milliamps., 80 volt and 120-volt taps, incorporating Westinghouse rectifier, 42/6; with 4 volts 4 amps. L.T., 7/6 extra.

PREMIER Eliminators, input 200-250 A.C., output 80, 100, and 120 volts at 20 milliamps., incorporating Westinghouse rectifier, 27/6; with L.T. charger incorporated, 35/-.

D.C. Eliminators, output 60, 90, and 120 volts, at 120 milliamps., 15/-; larger model, output 80, 120, and 200 volts at 50 milliamps., 25/-.

ACCUMULATOR Chargers for A.C. Mains, input 100-250 volts, 1-2 amp., 17/6; 1 amp., 22/6.

PREMIER Eliminators, input 200-250 A.C., output 150 volts at 30 milliamps., 2 lower taps, incorporating Westinghouse rectifier, 37/6, with 4-volt 3-4 amp. L.T.

AMPLION Moving Coil Speakers, type E.M. 644, dual fields, 2,500 and 5,000 ohms (100 or 200 volts), with multi-ratio output transformers; 15/-.

B.T.H., R.K. Minor, moving coil speaker, 2,500 ohm field; 15/-, with multi-ratio transformer.

AMPLION Permanent Magnet Moving Coil Speakers, type M.C.22, complete with multi-ratio transformer; 30/-.

15,000 Ohm Wire Wound Potentiometers, 1/6; Centralab potentiometer volume controls, 50,000 ohms, 2/-; Calverstats, logarithmically wound, potentiometers, 6,000 ohms, 1/9.

HEAVY Duty Variable Resistances (slider type), wound on porcelain; 350 ohms 1 amp., 2/6; 2,000 ohms ¼ amp., 5/- 500 ohms ½ amp., 5/-; B.T.H. electric gramophone motors, induction type, 100-250 volts, A.C., 30/- complete; double spring gramophone motors, complete 15/-, single spring 9/-; B.T.H. A.C. and D.C. motors, 55/-.

WESTERN ELECTRIC Public Address Speaker Horns, weatherproof, exponential, 7ft. long, bell 22×14, fit practically any unit, constructed of solid timber, weight 100lb.; 25/-, carriage forward.

SPECIAL Offer of Kolster Brandes Gramophone Motors (electric), all complete with turntables, list price £5; No. 1, super A.C. 100-250v., induction type, 35/-; No. 2, super universal 100-250 A.C. and D.C., £2; No. 3, clockwork motor, electrically wound, £2/5.

WIRE-WOUND Resistances, any value up to 10,000 ohms, carry 3 watts, 1/- each, listed 3/-; 6 watts 2/-; 12 watts 4/-.

CONDENSER Blocks, 3 separate 4 mfd. condensers, 400v. working, 8/6; with 2 separate 1 mfd. condensers, 2/- extra.

WESTERN ELECTRIC 60 watt and 250 watt Output Valves in Stock at Low Prices.

T.C.C. Condenser Blocks, 3+2+0.5+0.5 mfd., 250 volts, working, 3/6.

WESTERN ELECTRIC Condensers, 250v. working, 1 mfd. 6d., 2 mfd. 1/-; 400v. working, 1 mfd. 1/-; 2 mfd. 2/-.

T.C.C. Electrolytic Condensers, 2,000+2,000 mfd. 10/-; T.C.C. 1 mfd., 2,000v. working, 5/-.

AMPLION High Inductance Chokes Resistance, 2,500 ohms, 80 henrys, 60 milliamps., 5/6.

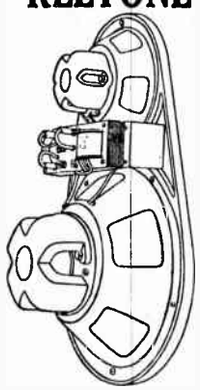
(This advertisement continued in third column.)

EASY TERMS PROMPT DELIVERY

WE RECOMMEND THE

CELESTION

"REETONE" SPEAKERS



MATCHED SPEAKERS

Type 99. Two Permanent Magnets ... £4 5 0
Type 88. Two Energised £4 5 0
Type 98. One Permanent Magnet & one Energised £4 5 0

Cash, carriage paid.

Or 7/10 with order and eleven payments of 7/10.

DUAL SPEAKERS

Type 829. Two Permanent Magnets ... £6 0 0

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Or 12/6 with order and twelve payments of 10/-.

COSSOR KITS AND VALVES

Melody Maker Battery Model 334, complete with valves and cabinet. Cash Price, carriage paid... £5 15 0
Or 15/- deposit and nine monthly payments of 12/6.

All Electric Model 336, complete with valves and cabinet. Cash Price, carriage paid ... £9 15 0
Or 19/6 deposit and ten monthly payments of 19/6.

Set of Three Cossor Valves. S.G. Det. and Power. Cash Price. carriage paid £1 12 3
Or 5/- with order and six monthly payments of 5/3.

Any Amplion, Blue Spot, Baker, Celestion, Epoch, Goodmans, Igranic, Lanchester, Ormond, R. & A., Rola, Sonochorde, or W.B. Moving Coil Speaker supplied promptly.

Send 5/- only and pay the balance by monthly instalments. No references. Entirely private and confidential. Write for Catalogue and details to:

TURNADGE & PARTNERS, LTD.,
111, Fleet Street, London, E.C.4.
Telephone: Central 1903.

SCRAP THAT DUD

That cheap pocket "any ohms per volt" iron meter, taking 30 m/a to give a reading, that has ruined your H.T. battery.

GET A DIX-ONEMETER

The ideal of multi-range moving coil meters. Micro-amps to 20 amps, milli volts to 1,000 volts. 50 ranges on one meter. Two clear scales with mirror and knife edge pointer.

ONLY

60/-

A remarkably low price for a meter worth £10. For Novice or Expert. Test Booklet Free.

The High-grade Radio Tester.
Low Price. High Value.

INSTRUMENT IN CASE, 60/-
MULTIPLIERS, EACH, 6/6.
COMPLETE RADIO OUTFIT
£4:19:6

NO STORE in LONDON has so comprehensive a stock of Scientific Apparatus at such low **BARGAIN PRICES.**

Aerials	**Microphones**	**Engines**
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Cable	**Chargers**	**Receivers**
Cases	**Dynamos**	**Spark Sets**
Chokes	**Motors**	**Valves**
	Wavemeters, etc.	

at ELECTRADIX HOUSE

1,000 other Bargains in our new Sale List W.W. Send addressed envelope for this money saver.

ELECTRADIX RADIOS

218, Upper Thames Street, E.C.4

Components, etc., for Sale.—Contd.

(This advertisement continued from first column.)

SPECIAL Offer of Mains Transformers, manufacturers type, any input, 250+250v. 60 m.a., 4v. 1a, C.T., 4v. 3a., C.T., 8/6; H.T.8 with 4v. 3-4 amps., 8/6; 180+180v. 40 m.a., 4v. 1a., 4v. 2a, 5/6; 175v. 50 m.a., 4v. 4a, 4v. 1a, 5/6.

PREMIER Transformer for "Wireless World Modern A.C. Quality Amplifier" (see this issue), 20/-; output and L.F. chokes for same, 10/6 each.

EKCO Microphones, complete with transformer, a really fine job, 18/6; wire-wound potentiometer, 50,000, 2/6.

S. G. BROWN'S Power Units, consisting of tapped mains transformer, Westinghouse rectifier, and T.C.C. electrolytic condenser, output 6v. 1 amp., for charging and energising; 21/-, listed £3/15.

WESTINGHOUSE Rectifiers, 120 volts at 20 m.a., 6/6; 180 volts at 30 m.a., 8/6; 8 volts at 0.5 amp., 6/6; 6 volts 1 amp., 9/6.

AMPLION Pick-up, with arm and volume control; 18/6.

ALL the Following Lines 6d. Each, or 5/- dozen assorted; Trimming condensers; shielded S.G. or Pentode leads; Dubilier 0.01 condensers; 2ft. lengths of screened wire; 5-pin valve holders; fuse bulb with holder; Crabtree sunk 5-amp. switches.

FOR Callers Only.—The following valves, guaranteed as new, half list price: M.P.Pen.; U.U.60/250; M.V.S.G.; A.C.Pen.; V.D.S.; D.P.T.; A.C./S.G., A.C./HL.

ALL Orders to 20-22-24, High St., Clapham, S.W.4. Callers to High St., Clapham (Macaulay 2188). Closed 1 o'clock Wednesday. Open till 9 o'clock Saturday. Nearest Station Clapham North Underground. [1883

BIRMINGHAM RADIO MART'S Weekly Selection Manufacturers' Surplus Stocks; new unless otherwise stated.

RESISTANCES, Erie, H.M.V., etc.; our selection, 5,000 to 100,000 ohms, 3/- dozen; Dubilier and T.C.C. mica condensers, 3/- dozen; H.M.V. hum stoppers, C.T., 9d.; anode oscillation stoppers, 3d.

METERS.—British flush 2½in. nickel, any range above 20 m.a., 5/9; few Sifam M.C., 15/-; 2 m.a., 17/6.

COLUMBIA 2-valve Chassis, complete, disc, dials, leads, etc.; 15/-; no valves.

CONDENSERS.—T.C.C. 1,700v. working, brand new, 4+4 mfd., with heavy stand-off insulators; 25/-; large stocks of Hydra and T.C.C.

GOLTONE Cosmic Coils, comprising one dual range coil and one short wave ditto on air spaced formers; the pair, 2/6.

MARCONI M.C. Output Transformer, 18 to 1, can be tapped for universal from 54 to 4½ to 1; our price 5/-.

2-GANG 0.0005 Die-cast Frame ⅛in. Spindle Trimmers, worth 17/6, finest quality; similar radiophone, 6/6.

NEW Boxed Lewcos Short Wave 6-pin Coils, 20-45 and 40-90 metres; 1/6, or 3/- pair, post free; series gap all-brass S.W. condensers, 2/6 each

REGENTONE Power Packs, containing mains transformers and Westinghouse rectifier, giving 150v. 25 m.a. and 4v. 4a., 25/-; filter packs for above, 7/6.

RADIO MART'S Oddment Sale now in full swing; hundreds of snips for callers.—19, John Bright St., Birmingham. [1842

RADIOPHONE Radiopak, 50/-; Ferranti push-pull input, 12/6; quantity condensers, resistances, 5/-.—Bryant, 2, South Ridgway Place, Wimbledon. [1831

NEWTH'S Offer Brand New Set Manufacturers' Surplus Mains Transformers, tapped and screened primary, L.T. windings, C.T., 500-0-500 at 120, 22/-; 450-0-450 at 120 m.a., 21/-; 350-0-350 at 120 m.a., 20/-; above have following L.T. windings, 4 volts 2.5 amps., 4 volts 5 amps., 4 volts 2 amps., to "W.W." Straight 5 specification, 400-0-400 at 120 m.a., 4 volts 6 amps., 4 volts 3.5 amps., 4 volts 2 amps., 27/-; "W.W." specification (described this week), quality amplifier, 400-0-400 at 120 m.a., 4 volts 3 amps. (C.T.), 4 volts 2 amps., 4 volts 1 amp., 24/-; 350-0-350 at 60 m.a., 4 volts 2.5 amps., 4 volts 3 amps., 12/-; 325-0-325 at 80 m.a., 4 volts 2.5 amps., 4 volts 4 amps., 12/-; 250-0-250 at 60 m.a., 4 volts 1 amp., 4 volts 3 amps., 4 volts 1 amp., 12/6; for Westinghouse rectifiers, H.T.8 200 volts 200 m.a., 4 volts 3 amps., 12/6; for H.T.9 240 volts 200 m.a., 4 volts 4 amps., (designed for "W.W." Baby Superhet). Chokes: 20-henry 120 m.a. (400 ohms), 9/6; 30-henry 60 m.a. (500 ohms), 6/6; 50-henry 60 m.a. (550 ohms), 8/6; 20-henry 30 m.a. (500 ohms), 5/6. Condensers: 750 test, 1 mfd., 1/1; 2 mfd., 1/9; 4 mfd., 2/6; 1,500 test, 1 mfd., 1/8; 2 mfd., 2/4; 4 mfd., 4/-; multiple blocks, 1,500 test, 20 mfd., 4+4+2+2+2+2+1+1, 11/-; 11 mfd., 4+2+2+2+1, 6/9; R.T. Parafeed transformers, 6/-; variable condensers, H.M.V. 2-gang semi screened, with trimmers, 6/6; resistances and grid leaks, H.M.V. (1) 10,000, (2) 100,000, (2) 0.25 meg., (1) 1 meg., (1) 2 meg., 2/- packet; pick-ups, 50/-; Ekco, with potentiometer, 15/-; constructors' kits, sealed cartons, Mullard Radio for the Million (A.C.3), with valves (S4V., 354V, Pen4V.,) list £6/10, 72/6; cabinets, 6/-; moving coil speakers, Magnavox X Core Gold, manufacturers' type, 9C/130 D.C., resistance 2,500, 60 m.a., with transformer, list £5/10, 24/-; Rola's S type U.S.A., with multi ratio transformer, 6 volts (8 ohms), 110-175 volts (2,000 ohms), 80-130 volts (2,500 ohms), 150-250 volts (4,700 ohms), 200-250 volts (6,500 ohms), 17/- each; P.M.s, 9¾ cobalt steel, 25/-; A.C. 200-250, 30/-; dual compensated, any two energised, 36/-; any energised to 1 P.M., 40/-; valves, last few, U.U.120/550, B.U.442, 9/-; H.F. chokes, H.M.V. screened, 50 m.a., 100,000 microhenrys, 1/-, 11/- dozen; carriage paid, c.o.d., or call.—Newth's Mayfair Radio, 31, George St., Hanover Sq., London, W.1. [1360

RADIO Surplus and Bankrupt Stock; long list for stamp; save you pounds; for example, Westinghouse rectified eliminator, 200v. 30 m.a. (in case), with 3 lower tappings, unused, £1/18/6; or with L.T., £2/2.—All goods fully guaranteed by Trevor Pepper, Wake Green Rd., Birmingham. [1840

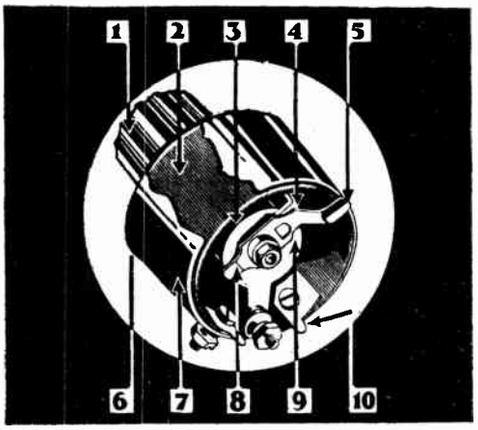
VARLEY Filament Transformer, 13/6; Nicore I. 12/-; Ferranti O.P.M.1, 13/6.—Kay, 45, Crescent Rd., Middlesbrough. [1825

AMERICA Nightly! All-wave tuner, 20-2,000 metres, reaction incorporated; 6/-.—Evans, 77, Jermyn St., London, S.W.1. [1847

SUPER Senior, on baseboard, unwired; no reasonable offer refused.—Brooks, Craigengillen, Layton Rd., Hounslow, Middlesex. [1856

BUY WATMEL THIS YEAR WATMEL POTENTIOMETER (TYPE 2)

This Potentiometer is suitable for all purposes of voltage regulation, H.T. Supply, volume control, etc. A particular feature is that owing to its high inductance value, the high note response is preserved and a smooth silent control is obtained. These points are worth consideration :—



NOTE THE POINTS:

1. Polished pointer knob.
2. Wire-wound former.
   N.B.—The resistance is WIRE not compound with wire contacts.
3. Large contact plate.
4. Positive stop.
5. Contact finger. Phosphor bronze.
6. One-hole fixing—brass bearing bush resulting in perfect bearing.
7. Bakelite case—protects winding.
8. Back self-cleaning contact.
9. Insulating bush to insulate spindle from panel.
10. Stops at end of winding.

Any resistance up to 50,000 ohms .. 5/6

WatMel COMPONENTS
GET THE BEST OUT OF ANY SET

If you cannot get this component from your local dealer write to us and we will send what you require within 24 hours.

Write for Catalogue.

We are at the B.I.F. STAND 61, "Hall of Music."

WATMEL WIRELESS CO. LTD.
Imperial Works, High Street, Edgware.
Telephone: Edgware 0323.

M.C.83.

Components, etc., for Sale.—Contd.

R.

SELECTED Parts for Sale, as new; any c.o.d., or "Wireless World" deposit system, which we recommend if in doubt as to the splendid value offered; we take all risk of damage in transit to our customers; all goods tested for callers and guaranteed, however low price. Notice.—Payment by cheque; no goods despatched until these are cleared.

T.C.C. 1 mfd. type 65, 1/3; T.C.C. type 85, 1 mfd., 375v. working, 1/6; T.C.C. 2 mfd., 250v., type 65, 1/6; T.C.C. 2 mfd., 375v. working, 1/9.

METERS, moving iron and moving coil, all new instruments specially made for Ryall's Radio, all guaranteed for one year, moving coil meters to B.E.S. first grade specification, all panel flush type bakelite case.

MOVING Coil, 0-1 m.a., 25/-; 0-10 m.a., 0-50 m.a., 0-25 m.a., 0-5 m.a., 21/-; 0-250v., 1,000 ohm per volt, 37/-; 0-300v. ditto, 32/6; all with zero adjustment, size 3¼in. diameter, 2¹⁵/₁₆in. dial face.

MOVING Iron Meters, first grade air damped, with zero adjustment, A.C. meters, 0-250v., 18/-; A.C. and D.C., 0-50 m.a., 15/-, size as above.

MOVING Iron Meters, in cases, as above, A.C. meters, 0-12v., 10/-; 0-250v., 12/-; 0-6 amp., 10/-; A.C. and D.C. 0-20 m.a., 10/-; 0-50 m.a., 10/-; 0-10 m.a., 10/6; also flush type back terminals, nickel case, 2⅝in. diameter, D.C. only, 0-10 m.a., 7/-.

RYALL'S RADIO Offer Reliable Resistances, 1 watt, suitable for all "Wireless World" sets where a 1 watt resistance if specified, in values 100, 1,000, 2,000, 5,000, 6,000, 10,000, 25,000, 30,000, 75,000, 150,000, 250,000, 20,000, all values stated in ohms, 6d. each, guaranteed one year, wire ends, new goods.

RYALL'S RADIO Own Mains Condensers, offered with confidence, all with terminals, 4 mf. 250v. working, 400v. peak, 3/6; 4 mf. 400v. working, 600v. peak, 4/6; 4 mf. 750v. working, 1,000v. peak, 7/6; 2mf. 750v. working, 4/6; new goods.

RYALL'S RADIO Mains Transformers, new goods, 250v. 60 m.a., 4v. 1 amp., 4v. 3 amp., 10/6; ditto, super type, with 4v. 5 amp., 17/6; 350v. 60 m.a., 4v. 2 amp., 4v. 4 amp., 12/9; step up or down transformer, 110v. to 220v., 10/6; transformer for H.T.8 with 4v. 4 amp., 12/9; H.T.7, 10/9; filament, 4v. 5 amp., 8/6.

RYALL'S RADIO Chokes, 20H 120 m.a. resistance, 260 ohm, 8/9; 25H at 60 m.a., res. 260 ohm, 6/9; 40H 100 m.a. resistance, 600 ohm, 10/6, constant inductance chokes.

IGRANIC Mains Transformers, 110/250v. input, 250v. 75 m.a., 4v. 1 amp., 12/-; 460v. 120 m.a., 7.5, 8v., 1.5v., to clear at 17/6.

MAGNAVOX D.C. 144, with transformer, 2,500 ohms, 22/-; Rola D.C. 2,500 ohm, with pentode transformer, 22/-; 6,500 ohm, ditto; post free.

SET Cabinets for 3v. A.C. Sets, room for speaker, suit "W.W." A.C.3, etc., brand new, fitted escutcheon, 20/-; used, 16/-.

SPECIAL Offer of Pye 20h. Chokes, 40 m.a., 130 m.a. maximum, D.C. resistance 300 ohms, in brown crystaline finish, new, unused, Pye 32h. chokes, D.C. resistance 750 ohms, 30 m.a., 80 m.a. maximum, ditto, 6/3 each, post free.

VALVES, used, many as new, 244v. L.F., 484, 41M.L.F., Marconi P2B super 2v., new, 7/6 each; S4V.A., A.C. S.G., M.S.4, 7/6; S4V.B., 8/-; to callers only, the following, U5, 8/-; U8, 10/-; L.S.6A, 12/-; Mazda U.U.60 550, 9/-.

METERS.—Weston 506 0-500 m.a., 20/-; Weston 301 projecting 0-15a., 20/-; Weston 506 150v. 20/-, 200v. 20/-; Ferranti 0-7v., 20/-.

TRANSFORMERS.—Ferranti O.P.M.1C, 16/6; O.P.M.2C, 14/6; O.P.M.4, 14/6; Nicore 1, 9/-; Permacore, 9/-; Ferranti B1 choke, new, 14/6; used, 13/6; Edison Bell, new 50h. choke, 100 m.a., massive job, 12/-.

RYALL'S RADIO, 33, Chancery Lane, London, W.C.2 (nearest Tube, Chancery Lane; 'bus 67 passes door, or tram to Savoy St.). Holborn 3529. Open Saturday afternoon. Close 7 p.m., Thursdays 1 o'clock, Saturday 6 p.m.

R. [1857

CONDENSER Blocks: 6d per mfd., 650-volt test, in blocks of 6 mfd. upwards, wired in 2 mfd. units; 2 years guarantee; send by return of post on 7 days' approval; cash with order.—Butlers Radio, Ltd., 191, Forest Rd., Walthamstow, E.17. 'Phone: 3134. [0396

LIMITED Number ex Government Heterodyne Receivers, disposal, wonderful chance experimenter, home constructor, original cost these sets about £20, excellent condition, mahogany cases; also number ex Naval 3-valve L.F. amplifiers, fitted 4 Ericsson L.F. transformers, excellent condition, mahogany cabinet, quick sale price, receivers 17/6, amplifiers 12/6, carriage forward; Army surplus, Army loud sounding buzzers, new, 4/6, post paid, worth five times this price; Marconi Co.'s multiple valve high frequency amplifiers, fitted in metal screening boxes, wavelengths 300 to 1,300 metres, good condition, 12/6, carriage forward.—J. B. Humphreys and Co., 23, College Hill, Cannon St., London, E.C.4. [1693

SOUTHERN RADIO'S Set Manufacturers' Guaranteed New Surplus.

READY RADIO Meteor 3-valve Screen Grid Battery Kits, new, in sealed cartons, 27/6; less valves; with 3 Mullard valves (P.M.12, P.M.2D.X., P.M.2), £2/10/6 (listed £5/7/6); Ready Radio 303 3-valve battery kits, new, in sealed cartons, 21/-, less valves; with 3 Mullard valves (P.M.2D.X., P.M.2, P.M.1L.F.), 39/- (listed £3/10); Mullard Radio for Million A.C. 3-valve kits, in sealed cartons, including 3 Mullard valves (P.M.N.4V., 354V., S.4V.), £3/12/6 (listed £6/10); Dual Gang variable condensers (H.M.V.), 0.0005, shrouded, and trimmers, 6/-; screened chokes (H.M.V.), 1/- each, 9/- dozen; condensers, all 750 volt test 4 mfd. 2/6, 2 mfd. 1/9, 1 mfd. 1/1; blocks, 10 mfd. (2+2+2+2+1+1), 1,500 volt test, 6/9 each; all goods guaranteed and post paid.—Southern Radio, 323, Euston Rd., London, N.W. (near Warren St. Tube). 'Phone: Museum 6324. [1862

PROSPERITY, 3 coils, 19/-; Bulgin type B, D.C. mains resistance, 12/-; Clarks Atlas multi Pentode choke, C.P.S., 13/-; 0.0005 3-gang condenser, 5/9; all new goods.—8, Hatherley Gardens, East Ham, E.6. [1828

WEST END RADIO STORES, 14, Lisle St., Leicester Sq., W.C.2, and 382, Coldharbour Lane, Brixton, S.W.9, liquidator's stock of all mains sets, chassis, components, etc., as advertised in *The Wireless World*, February 10th. [1876

RADIOPHONE 3-gang, 17/6; A.C./Pen., 10/6; Amplion E.M.644, 12/6, unused, perfect.—Bruce, 140, St. Ann's Rd., Rotherham. [1850

CHASSIS and Screen Panels, constructed to any design, aluminium sheet supplied; estimates free.—Minns, 19, Woodthorpe Rd., King's Heath, Birmingham. [1848

The "WIRELESS WORLD" SPECIFIES A SAVAGE TRANSFORMER and CHOKE FOR THE "MODERN A.C. QUALITY AMPLIFIER"

BECAUSE

★ ***300% over voltage and interwinding tests are carried out on every instrument.***

★ ***They are generously designed thus ensuring cool running and good regulation.***

★ ***Scrupulous care is taken to secure perfect insulation. Accurate layer winding, wax paper interleaved is standardised.***

★ ***Massive ferro silicon cores are positively clamped.***

★ ***Every Savage instrument is guaranteed.***

For the "Modern A.C. Quality Amplifier":

Mains Transformer, type MGA.

Standard Model ... ... Price 40/-
Manufacturers' type ... ... Price 34/

Choke Type L34.

Standard Model ... ... Price 15/-
Manufacturers' type ... ... Price 13/-

Prompt deliveries of these and other Savage instruments can be made. Send to-day for complete price and specification list No. WW19.

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GUARANTEED MAINS EQUIPMENT

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56/58, CLERKENWELL ROAD, E.C.1.
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RICH & BUNDY
MAINS TRANSFORMER
(MODEL 44)
Recommended for the
'MODERN STRAIGHT FIVE'
POWER UNIT

PRIMARY UNIVERSAL VOLTAGE.
200-250 V. 40-100 cycles.
Other Voltages to Order.
SECONDARIES 400-0-400
120 m/a.
4V. C.T. 3½ amps
4V. C.T. 6 „
4V. C.T. 2 „
Earthed Copper Electro-static Screen over Primary

PRICE **62/6** Carriage Paid.

All RICH & BUNDY Mains Transformers for Radio are fitted with Screened Primary.

Manufactured by
RICH & BUNDY Ltd., Transformer Manufacturers, NEW ROAD, PONDERS END, MIDDX. *'Phone: Enfield 0777*
Sole Distributors I.F.S.—
KELLY & SHIEL Ltd., 47, Fleet St., Dublin, C.4.

For the best reproduction from
"THE MODERN A.C. QUALITY AMPLIFIER"
use a
BAKER SPEAKER.
BEST BY TEST.

CRESSALL RESISTANCES
"Cressall" Asbestos-Wire Woven Resistance Nets for voltage absorbing on D.C. Mains. Receivers. Mica-Wound Resistance Units. Sliding Resistances. Resistance Wires.
Please write for Lists.
CRESSALL MANUFACTURING COMPANY, 31-32, TOWER STREET, BIRMINGHAM.

GRIPSO
PATENT SHROUDED PLUG & SOCKET
SUPERIOR AND MORE CONVENIENT THAN TERMINALS
4½D. COMPLETE
THE GRIPSO COY.
28, VICTORIA ST. LONDON, S.W.1.

GODFREY RADIO LTD.
for De Luxe
SHORT WAVE APPARATUS
COMPONENTS—SETS—CONVERTERS
63-5-7, Chenies Mews, London, W.C.1. Museum 8134.

JUNIT
SYNCHRONOUS ELECTRIC CLOCKS
Write for the new Complete Catalogue including models to match Pye, Ultra, etc., radio receivers.
Junit Mfg. Co., Ltd., Junit Works, Steele Rd., Chiswick, London, W.4

Famous Maker's Offer!
PIANO-TONE! CABINETS.
7 DAYS' FREE TRIAL
(OR 10/- MONTHLY).
Piano built (Pat. 8123), the acoustic tone brings a fine thrill (Piano Oak). (*Radio Press, B.B.C., 3,000 clientele*).
At Maker's Prices, 35/- to £15.
LIST FREE.
Send for photographs, detail drawings.
Picketts Piano-Tone Cabinets, Albion Rd. (w.w.) Bexleyheath, Kent.

Components, etc., for Sale.—Contd.

HOYNE'S Transformers and Chokes.

250-0-250v. 60 m.a., 4v. 1-2a., C.T., 4v. 3-4a., C.T.; 10/-, post 9d.

350-0-350v. 70 m.a., 4v. 2-3a., C.T., 4v. 3-4a, C.T.; 12/6, post 1/-.

350-0-350v. 120 m.a., 4v. 2a., C.T., 4v. 4-6a., C.T., 4v. 2a., C.T.; 16/-, post 1/-.

450-0-450v., 150 m.a., 4v. 2-4a., C.T., 4v. 2-6a., C.T., 4v 2a., C.T., 4v. 2a., C.T.; 25/-, post 1/3.

500-0-500v. 140 m.a., 4v. 2-4a., C.T., 4v. 2-6a., C.T., 4v 2a., C.T., 4v. 2a., C.T., or 6v. windings if preferred; 27/6, post 1/3.

WESTINGHOUSE Model 150, 200, 240v., 300 m.a., 4v 2a., C.T., 4v. 2-6a., C.T., suitable for H.T.8, H.T.9, or H.T.10; 15/-, post 1/3.

LINE Transformers (auto wound), 0-100, 110, 200, 220, 240v., 60 watt, 7/9, post 1/-; 120 watt, 11/-, post 1/-; 180 watts 15/-, post 1/3.

CHOKES, 30h. 150 m.a., 12/-, post 1/-; 20h. 120 m.a., 8/6, post 9d.; 30h. 60 m.a., 6/-, post 6d.; 30h. 30 m.a., 3/6, post 6d.

HOYNE'S Transformers are Guaranteed for One Year; every model is made from British material of best quality.

HOYNE'S Transformers.—All primaries are tapped and screened, clamped in aluminium frames, and fitted with clearly marked terminal strips.

HOYNE'S Transformers for Reliability.

HOYNE'S for Best Condensers and Resistances.

HOYNE'S Stock M.C. Speakers.

M. J. HOYNE, Offices and Works, 8a, Gladstone Rd., Wimbledon, S.W.19. 'Phone: Liberty 3303. 1770

EVERYTDING for Movies and Talkies.—'Phone, write or, better still! call and inspect immense stock of bargains.
ILLUSTRA ENTERPRISES, 159, Wardour St., London, W.1. Tel.: 6889 Gerrard [1621

THE LONDON RADIO SUPPLY Co. has for Disposal the Following Equipment; first figure represents list price, second, sale price.
3 Mullard D.O.60 Valves at £5/10, £2/10 each; 2 Mullard D.O.25 valves, £1/10, £1 each.
1 Ferranti Panel Milliameter 0-15 m.a., 2 0-150 m.a. at £1/15, £1/5 each; 1 Ferranti output transformer, O.P.M.1, £1/2/6, 16/6; 1 Ferranti push pull transformer, A.F.5C., £1/14, £1/5.
2 Public Address Microphones, with transformers and volume controls; £2/5, £1/5 each.
1 Rich and Bundy Output Transformer, 25-1 for 2 D.O.60 or 2 D.O.25, in push pull, weight 7 lb., £2/15, £1/12/6; ditto, for 2 D.O.25 valves in push pull, £1/10, £1/1.
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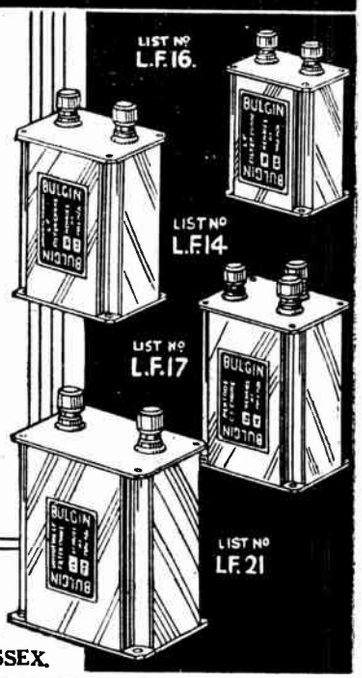

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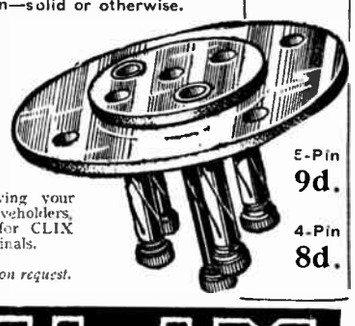

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THIS talk is the fifth of a series on speaker technicalities and you are advised to cut each one out as it appears.

THE vibration of the speaker diaphragm under working conditions sets up varying air pressures in front of, and behind, the cone. These pressures tend to damp the diaphragm movement, restrict its amplitude, and reduce the output of sound. At low frequencies (i.e. high amplitudes) this tendency is most marked: for instance, a moderate input at 50 cycles will produce a current of air in the chassis so strong as to extinguish a lighted match.

From the above, the need for rapid and free dispersion of these air pressures from the back of the diaphragm will be obvious. Thus, open construction is a very important feature of chassis design. But open construction also calls for mechanical sturdiness, otherwise the chassis will be so weakened as to produce resonances of its own.

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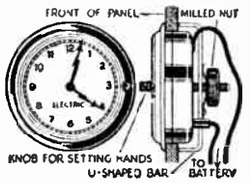

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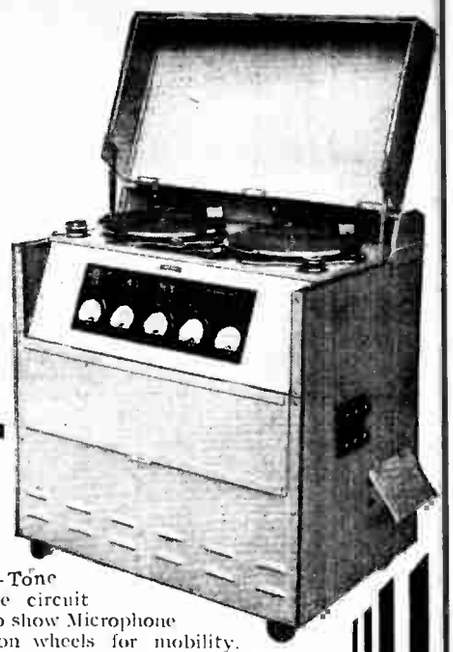

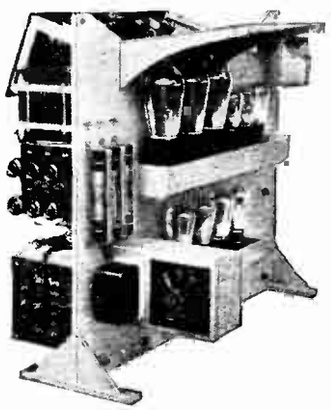

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WEDNESDAY

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PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL — Recital of new gramophone records. Symphony concert from Bournemouth. Professor H. J. Laski: "What is the State?" Symphony concert, relayed from Queen's Hall. Strange Music.

LONDON REGIONAL — Ballad concert. Orchestral concert. Tango orchestral programme. Organ recital. "The Captain of Kopenick," a play.

MIDLAND REGIONAL — Orchestral concert. "Rhythm," a gramophone recital.

NORTH REGIONAL — Concert by Manchester Vocal Society. Professor T. H. Pear: "Individual Happiness in an Industrial World." Musical comedy programme.

WEST REGIONAL — Orchestral concert from National Museum of Wales. Mr. W. W. Jervis: "Ancient Miners on Mendip."

SCOTTISH REGIONAL — A programme of Gaelic song and speech in memory of the Highland Bard, Calum Macpharlain.

BELFAST — Orchestral concert from Strannillis. National programme.

ABROAD

COPENHAGEN — Concert of French music, by the Station Orchestra.

HAMBURG — "The Flying Dutchman," by Wagner, relayed from the Schiller Theatre.

HILVERSUM — Carillon recital from Nijkerk.

PRAGUE — Missa Solemnis in D, by Beethoven.

RADIO PARIS — The Lamoureux Concert Society, conducted by F. Hupka.

ATHLONE

413 metres; 60 kW., and **CORK, 224.4 metres.—1.30 to 2.0 p.m.,** Time Signal, Weather Report, Stock Report and Light Music on Gramophone Records. **6.0,** Popular Music on Gramophone Records. **6.15,** Programme for Children. **7.0,** Light Music on Gramophone Records. **7.20,** News Bulletin. **7.30,** Time Signal. **7.31,** Gaelic Talk. **7.45,** German Lesson. **8.0,** Programme to be announced. **8.15,** Symphony Concert, conducted by Sir Henry Wood, relayed from the Queen's Hall. **London. 9.15,** Soprano Solos by Mollie Phillips. **9.30,** A Revue—by Dorothy Day and Company. **10.30,** Time Signal, News, Weather Report and Close Down.

BARCELONA

RADIO-BARCELONA, Call EAJ1, 348.8 metres; 8 kW.—**6.0 p.m.,** Trio Concert. **7.0,** Request Gramophone Concert. **7.30,** Exchange Quotations. **8.0,** Light Music on Gramophone Records and News Bulletin. **9.0,** Chimes from the Cathedral, Exchange Quotations, and Market Prices. **9.5,** Concert by the Station Orchestra: March (Kostal); Selection from El domino azul (Arrieta); Waltz, Estudiantina (Waldteufel); Entr'acte from Gismonde (Février); Nocturne (Field); Hungarian Dance, No. 3 (Brahms). **10.0,** La Creu de la Masia—Catalan Play in Three Acts (Federico Soler). **11.0** (in an interval), News Bulletin. **12 Midnight** (approx.), Close Down.

BARI

269.8 metres; 20 kW.—**7.0 p.m.,** Agricultural Notes, Tourist Talk, and Dopolavoro Notes. **7.20,** Giornale Radio and Weather Forecast. **7.30,** Time Signal and Announcements. **7.35,** Concert of Chamber Music: Nilde Pignatelli (Violin), Maria de Santis Bruno (Soprano), and Donato Marrone (Pianoforte); Overture to a Ballet (Lincke); Violin Solos: (a) Chemin du cœur (Seelsi), (b) Cascade (Vecsey); Soprano Solos: (a) Tormento (Tosti), (b) M'ama, non m'ama (Mascagni); Gavotte (Bolzoni); Pianoforte Solos: (a) Berceuse (Albéniz), (b) Seguidilla (Albéniz); Violin Solo: First and Second Movements from the Sonata in E (Veracini); Soprano Solo: Mediæval Ballad (De Lucia); Pianoforte Solo: Scherzo, Op. 39 (Chopin); Overture (Silvery); Violin Solos: (a) Minuet (Mozart-Burmester), (b) Piece (Ries); Soprano Solo: Nuit d'Espagne (Massenet); Pianoforte Solos: (a) Rêverie (Debussy), (b) Cocodè (Agostini); Adagio from the Sonata for Violin and Pianoforte (Zuelli); Soprano Solo: La preghiera del lumicino (Casavola); Pianoforte Solo: Carnaval Scene (Grieg). In the interval: Literary Notes. **9.30,** Concert relayed from the Gran Caffè del Levante. **9.55,** News.

BASLE.—See **Schweizerischer Landessender.**

BELGRADE

430.4 metres; 2.8 kW.—**6.30 p.m.,** Variety Music on Gramophone Records. **7.5,** Programme to be announced. **9.0,** News and Cigány Music Relay.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres, 60 kW.—**12.35 p.m.,** News Bulletin. **1.0,** Gramophone Concert from **Berlin (Witzleben). 2.0,** Programme for Children. **2.30,** Weather and Exchange. **2.45,** Reading (K. H. Waggerl). **3.0,** Talk on Sports Training. **3.30,** See **Hamburg. 4.10,** Legal Talk. **4.30,** Talk: Forms of Life. **5.0,** Chamber Music—Old Italian Pianoforte Music: Studio (Francesco Durante); Sonate in D (Baldassaro Galuppi); Sonata in A (Pietro Domenico Paradisi); Sonatas in F, D Minor and C (Scarlatti). **5.25,** Topical Talk. **5.40,** Wireless Technical Talk. **5.55,** Weather and Announcements. **6.0,** French Lesson. **6.30,** A Poem. **6.35,** Concert from **Stuttgart. 7.15,** Programme by Hermann Hans Schaufuss and others. **8.0,** Topical Talk. **8.20,** Concert of Light Music by the Ludwig Rüth Orchestra: On the Waters of Minnetonka; Hindoo Song (Rimsky-Korsakov); Symphonette Spirituelle (Lange); Tango (Rathaus); Dreissig Jahre Berlin (Mackeben); Valse caractéristique for Saxophone and Orchestra (Carste); Regen (Ford); Blaue Schatten (Grofe); Indian Love Call (Friml); How am I to know? (King). **9.15,** Weather, News and Sports Notes. **9.45,** Weather Report for Shipping. **10.0,** Dance Music from **Frankfurt. 11.0** (approx.), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—**6.0 p.m.,** Topical Talk. **6.10,** Talk: Politics as a Career. **6.25,** Life in Shops—Dialogue with Shop People on Prospects in the Retail Trade. **6.50,** Concert by the Berlin Wireless Orchestra, conducted by Maximilian Altrecht: Carnival Overture (Braunfels); Dance Suite, Op. 36 (von Franckenstein); Ballet Suite, Der faule Hans (Nedbal). **7.50,** Hugo Wolf Song Recital, by Karl Erb: Zum neuen Jahr; Der heilige Joseph singt; Epiphanias; Blumengruss; Gleich und Gleich; Ach, im Maien war's; Der Musikant; An die Geliebte. **8.10,** Hugo Wolf—a Radio Picture (Dr. Erich Fortner). **9.10,** Weather, News and Sports Notes, followed by Dance Music from the Roof Garden of the Cafe Berlin.

BERNE.—See **Schweizerischer Landessender.**

BEROMUNSTER. — See **Schweizerischer Landessender.**

BODEN.—See **Stockholm.**

BODO.—See **Oslo.**

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—**7.30 p.m.,** News and Market Prices. **7.40,** Dramatic Criticisms. **7.55,** Lottery Results. **8.0,** Agricultural Report. **8.15,** News and Weather Forecast. **8.30,** Light Music on Gramophone Records. **9.0,** Orchestral Concert. Soloists: Mme. Lucile Joel and M. Jourdan-Bedey (Songs).

BRATISLAVA

279 metres; 14 kW.—**4.0 p.m.,** Programme for Children. **4.45,** Polish Lesson. **5.0,** Hungarian Programme: Talk, followed by Readings and Songs by M. Bartu (Baritone). **6.0** till Close Down, See **Prague. 10.0** (approx.), Close Down.

BREMEN.—See **Hamburg.**

BRESLAU

325 metres; 60 kW.; and **GLEIWITZ, 253 metres.—12.10 p.m.,** Gramophone Concert: Overture, Oberon (Weber); Hungarian Dances, Nos. 1 and 3 (Brahms); Innsbruck, ish muss dich lassen (Isaac); Spinning Chorus from The Flying Dutchman (Wagner); Minuet from Don Giovanni (Mozart); Le tambourin (Rameau); Rondo, Le Coucou (Daquin); Frühlingsstimmen (Joh. Strauss). **12.45,** Time, Weather, News and Exchange. **1.5,** Gramophone Concert: Overture, Gipsy Love (Lehar); Vivat Hungaria! from Der Teufelsreiter (Kalman); Serenade (d'Ambrosio); Guitar, Op. 45, No. 2 (Moszkowski); Heimliche Aufforderung (R. Strauss); Morgen (R. Strauss); Leise zieht durch mein Gemüt (Mendelssohn); Songs (Brahms): (a) Der Schmied, (b) Sandmännchen; Overture, Martha (Flotow). **1.45,** Sponsored Programme with Gramophone Records. **2.10,** Agricultural Prices. **3.0,** Educational Talk. **3.30,** Coloratura Aria Recital by Irmgard Armgart: Arias from (a) A Masked Ball (Verdi), (b) Rigoletto (Verdi), (c) Mignon (Thomas), (d) La Bohème (Puccini). **4.0,** Book Review. **4.15,** Agricultural Prices, followed by Reading. **4.30,** Chamber Music Concert, Wilhelm Schetzke (Cor Anglais) and Viktor Plewig (Clarinet); Little Suite Op. 87 for Cor Anglais and Pianoforte (Draesecke); Duet, Op. 48, for Clarinet and Pianoforte (Weber). **5.5,** Talk: The Reichswehr from a Legal Point of View. **5.30,** Talk for the Ninetieth Anniversary of the Death of Friedrich von Sallet. **5.45,** Talk: Intellectual Developments in the Peasantry To-day. **6.10,** Instrumental Concert of Light Music. In an interval at **6.35,** Weather for Farmers. **7.5,** Talk: Upper Silesian Fortresses and Castles of the Renaissance Period. **7.30,** Hugo Wolf Concert for the Thirtieth Anniversary of the Composer's Death. The Silesian Philharmonic Orchestra and the Station Choir. Soloists: Ilka Ballies (Soprano), Herbert Heidrich (Tenor), and Gerhard Bertermann (Baritone). Mixed Choir: Ergebung; Gebet; Fussreise; Der Feuerreiter; Verschwiegene Liebe; Der Soldat; Women's Choir and Orchestra: Song of the Elves, from A Midsummer Night's Dream; Anakreons Grab; Der Rattenfänger; Songs from the Spanisches Liederbuch: (a) Herr, was trägt der Boden hier, (b) Herz, verzage nicht geschwind; Airs from the Italienisches Liederbuch: (a) Italienische Serenade for Orchestra, (b) Gesegnet sei, durch den die Welt entstund', (c) Ich hab' in Penna einen Liebsten Wohnen; Prelude and Entr'acte from Der Corregidor; Wie glänzt der helle Mond so kalt und fern; Wohl denk' ich oft an mein vergangenes Leben; Spring Chorus from Manuel Venegas. **9.25,** Time, Weather, News, Sports Notes and Programme Announcements. **9.50,** Gramophone Cabaret. **10.30,** Dance Music, relayed from the Kit Cat, London. **12 Midnight** (approx.), Close Down.

BRNO

342 metres; 35 kW.—**4.10 p.m.,** See **Moravská-Ostrava. 5.5,** Review of Periodicals. **5.15,** Talk for Workers. **5.25,** German Transmission: News, Educational Talks, and Light Music on Gramophone Records. **6.0** till Close Down, See **Prague. 10.0** (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—**12 Noon,** Concert relayed from the Memline Hall, Antwerp. **1.0 p.m.,** Le Journal Parlé. **1.10,** Light Music on Gramophone Records. **5.0,** Dance Music from the St. Sauveur Palais de Danse. **6.0,** Talk: The Belgian Painter, Lucien Hock. **6.15,** Sonata No. 2, Op. 68, for Violin and Pianoforte (Deleroix), by Léon Delcroix and Alice Delcroix. **6.45,** The Clock Symphony (Haydn), on Gramophone Records. **7.15,** Talk: Colonial Literature—The Belgian Congo. **7.30,** Medical Talk. **8.0,** Pianoforte Recital by Charles Scharrès: Impromptu in G Flat (Chopin); Waltz in E Minor (Chopin); Ballade (Debussy). **8.15,** Criticisms, Suggestions, Questions, and Answers. **8.30,** Pianoforte Recital (contd.): Etude de concert, No. 1 (Stekke); Minuet (Scharrès); Sevilla (Albéniz). **8.45,** A Childhood Friend Comedy in One Act (Edmond See). **9.45,** Hot Jazz with Commentary. **10.0,** Le Journal Parlé. **10.10,** Orchestral Concert, relayed from the Ancienne Belgique. **11.0** (approx.), Close Down.

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW.—Programme in Flemish. **12 Noon,** Gramophone Concert: Marche du sixième régiment de Chasseurs à pied (Graindorge); Hungarian Dance No. 5 (Brahms); Chantilly Waltz (Waldteufel); Oriental Dance (Glazunov); Sérénade badine (Gabriel Marie); Tarantella, Napolitana (Popezki); Gallop, Flyer (d'Altonal); Waltz, Romona (Waldteufel); Fantasia on Der Roschochzeitszug (Jessel); Intermezzo, The Nightingales' Serenade (Klose); Rustle of Spring (Sinding); Souvenir de Rouen; Russian Folk Song; Jungle Drums (Ketelbey); Pavane (Lacena); Andalusian Caprice (Martinez-Rucker); Fantasia (Siede); Marche du quatrième régiment de chasseurs à pied (Aveau). **1.0 p.m.,** Le Journal Parlé. **1.10,** Concert, conducted by Paul Moreaux, relayed from the Memline Hall, Antwerp. **5.0,** Concert by Mickey's Club Jazz Attraction, conducted by Ludo Langlois. **6.15,** Review of New Books. **6.30,** Saxophone Solos by Paul Gason: Waltz (Door); Caprice (Guirimicts); En orient (Wiedoeft); Schön Rosmarin (Kreisler). **6.45,** Gramophone Records: Mascarade (Lacôme); The Dionysiaques (Schmitt); Viennese Rhapsody (Schmitt). **7.15,** Talk: The Transvaal. **7.30,** Review of International Affairs. **8.0,** Gramophone Records: Selection from The Damnation of Faust (Berlioz). **8.10,** Extracts from Faust. **8.30,** Concert by the Royal Zoological Society, conducted by Flor Alpaerts, relayed from **Antwerp;** Soloists: Mlle. Rosane Van Neste (Pianoforte) and Carlo Van Neste (Violin): Tempo di Galliarda (Rosenberg); Fughetta (Rosenberg); Concerto in D for Violin and Orchestra (Brahms); Adagio espressivo from the Second Symphony (Schumann); Second Concerto in C for Pianoforte and Orchestra (Rachmaninov), followed by Le Journal Parlé and Old and Modern Dance Music on Gramophone Records. **11.0** (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—**4.0 p.m.,** Concert by the Station Orchestra: Turkish March (Mozart); Waltz, Accelerationen (Jos. Strauss); Overture, Frau Luna (Lincke); Selection from Falstaff (Verdi); Weber Potpourri (Urbach). **5.0,** News and Time Signal. **5.10,** Talk. **5.25,** Concert by the Station Orchestra (contd.): Bourrée in A Minor (Bach); Adagio from Kol Nidrei (Bruch); Algerian Melody (Ketelbey); Donauwellen (Ivanovici). **6.0,** Talk on Romania: Her Methane Deposits. **6.40,** Popular Music on Gramophone Records. **7.0,** Time Signal. **7.2,** Dramatic Programme. **7.30,** Song Recital by M. Stefanovici (Tenor). **7.50,** Violin Recital: Sonata in A (Brahms); Berceuse (Ravel); Die Beine (Schubert). **8.20,** Pianoforte Recital: Papillons (Schumann); Sicilienne (Nottara); Arabesques on Themes by Strauss (Schulz-Evler). **8.50,** News Bulletin.

BUDAPEST

550 metres; 18.5 kW.—Programme also relayed on **840 metres** from **7.0 to 11.0 p.m. —4.0 p.m.,** Concert by the Budapest Concert Orchestra, conducted by Otto Berg. Selection from: (a) Martha (Flotow), (b) The Pearl Fishers (Bizet), and (c) Samson and Delilah (Saint-Saëns); Kaiserwalzer (Joh. Strauss); Kálmán Potpourri, Fortissimo (Feigel). **5.15,** Italian Lesson. **5.45,** Concert of Cigány Music. **6.30,** Programme by Franz Papp. **7.0,** See **Vienna. 9.15,** Pianoforte Recital by Béla Bartók: Grabaufschrift (Kodaly); Allegretto in C, Op. 3, Capriccio in C Sharp Minor (Brahms); Intermezzos in D and D Minor (Brahms); Capriccio in D Minor (Brahms); Sonata in E Flat, Op. 31, No. 3 (Beethoven). **10.0,** Cigány Music from the Hotel Metropole.

CASSEL.—See **Frankfurt.**

COPENHAGEN

281 metres; 0.75 kW.; and **KALUNDBORG, 1,153 metres;** 7.5 kW.—**11.0 a.m.,** Time and Chimes from the Town Hall. **11.5,** String Ensemble Concert, conducted by A. Bendix, relayed from the Wivex Restaurant. **12.15 p.m.,** Talk: The Baroque Period in Sculpture. **12.45 to 2.0,** Interval. **2.0,** Talk for Women. **2.30,** Orchestral Concert from the Wivex Restaurant. **4.0,** Gramophone Concert. **4.40,** Exchange and Fish Market Prices. **4.50,** Agricultural Talk. **5.20,** French Lesson for Beginners. **5.50,** Weather Forecast. **6.0,** News. **6.15,** Time Signal. **6.30,** Talk. **7.0,** Chimes from the Town Hall. **7.5,** Orchestral Concert of Operetta Music, conducted by Emil Reesen: Selection from Victoria and her Hussar (Abraham); Volga Song from The Czarevitch (Lehar); Viennese Music from The Duchess of Chicago (Kálmán); Selection from Oh, Kay! (Gershwin); March from Das Puppenmädel (Fall). **7.45,** Danish Song Recital by Christian Gottschalch. **8.25,** Topical Talk. **8.55,** News. **9.10,** Concert of French Music; The Station Orchestra, conducted by Emil Reesen: Overture, La Princesse Jaune (Saint-Saëns); Prelude to Le Déluge (Saint-Saëns); Serenade and Fête foraine from Namouna (Lalo); Easter Sunday before the Church at Pont-Aven (Rhené-Baton); Prelude to Act Three of Hérodiade (Massenet); Minuet and Rigaudon from Le tombeau de Couperin (Ravel). **9.50,** Dance Music from the Lodberg Restaurant. In the interval at **11.0,** Time and Chimes from the Town Hall. **11.20** (approx.), Close Down.

CORK.—See **Athlone.**

SUN. MON. & TUES. PROGRAMMES

FEB. 22nd **WEDNESDAY** *continued*

CRACOW

312.8 metres; 1.5 kW.—**5.45 p.m.,** Talk and Announcements. **6.15,** Talk. **6.30** till Close Down, See **Warsaw. 10.0** (approx.), Close Down.

DANZIG.—See **Heilsberg.**

DRESDEN.—See **Leipzig.**

DUBLIN.—See **Athlone.**

FECAMP

223 metres; 10 kW.—**12.0 Noon,** Light Music on Gramophone Records. **12.30 p.m.,** News Bulletin. **12.45,** Chansonnettes. **6.0 to 7.0,** Programme in English by the I.B.C., C. Danvers Walker, R. Chene and B. McNab announcing. **6.0,** Concert for Portsmouth and Southsea Listeners: Nautical Moments (arr. Winter); Cornet Solo: The Lost Chord; Over the Waves (Rosas); Snacks in Bars (Egerer); Waltz, Gold and Silver (Lehár); Cornet Solo: I hear you calling me (Marshall); More Nautical Moments (arr. Winter). **6.30,** Song Recital for Isle of Wight Listeners: Mattinata—Morning Song; To Mary; Maire my Girl; Heather Moon; Down Vauxhall Way; Beauty's Eyes; On a dreaming Summer Night; Serenata. **7.0,** Local News. **7.15,** Popular Music on Gramophone Records. **7.30,** Radio Gazette. **8.0,** Talk. **8.15,** The Listeners' Quartet of an Hour. **8.30,** Concert. **9.0,** Sacred Concert, relayed from a Church in Argoules. **10.0** till Close Down. Programme in English by the I.B.C. **10.0,** Dance Music. **11.0,** Orchestral and Vocal Concert: Grand March from Tannhäuser (Wagner); Songs: (a) La Donna e mobile from Rigoletto (Verdi), (b) Flower Song from Carmen (Bizet); The Soldiers' Chorus from Faust (Gounod); Songs: (a) E lucevan le stelle from Tosca (Puccini), (b) Walther's Song from The Mastersingers (Wagner); Selection from Rigoletto (Verdi). **11.30,** Light Orchestral Concert: Fleurette (Percy Fletcher); Violin Solo: Because (d'Hardelot); The Wedding of the Rose (Jessel); Glowing Embers (Marsden); Violin Solo: Song of Songs (Moya); Moonlight on the Alster (Fetras); In a Pierrette's Garden (Brookes); The Frog King's Parade (Kronberger). **12.0 Midnight,** Variety Concert. Accordion Band: Medley of Swedish Airs; Song: I kiss your little Hand, Madame; Trio: Bubbling over with Love; My Beauty Waltz; The Rose in the Heather; Song: A Thousand Maidens fair; Trio: Laughing at the Rain; Accordion Band: Festival March. **12.30 a.m. (Thursday),** Concert of Light Music: Hungarian Medley (arr. Leggett); Song: Aeushla Machree; Hungarian Dance, No. 6 (Brahms); Duets: (a) Come to Arcadie, from Merrie England (German), (b) Come to the Fair (Easthope Martin); Song: Rose of Killarney; Vocal Quartet: John Peel; Anitra's Dance from Peer Gynt (Grieg).. **1.0,** Banjo Solos: Overture, Poet and Peasant (Suppé); Desert Breeze; The Buffoon; Finger Tricks; Selection from Faust (Gounod); Viva la liberta; Banjo Vamp; Medley of Popular Airs. **1.30,** Light Songs: Excuse me Lady; I remember you from Somewhere; My Song of the Nile; Orchestra: Song of the Islands (King); I'm just a Vagabond Lover; West Wind; Go to Bed; Orchestra: That Lindy Hop. **2.0 a.m.,** Dance Music. **2.57,** I.B.C. Good-night Melody. **3.0** (approx.), Close Down.

FLENSBURG.—See **Hamburg.**

FLORENCE.—See **Turin.**

FRANKFURT

259 metres; 17 kW.; and **CASSEL, 245.9 metres.**—**6.15 p.m.,** Time, Programme Announcements, Weather and Economic Notes. **6.30,** Trier Authors and their Work—a Review. **7.15,** Deutsches Volksliederspiel, Op. 32 (Zilcher), by Margret Zilcher-Kieseckamp (Soprano), Maria Gross-Nauer (Contralto), Siegfried Lechler (Tenor), Georg Walberer (Bass), and Hermann Zilcher (Pianoforte). **8.0,** See **Stuttgart. 9.20,** Time, News, Weather and Sports Notes. **9.45,** See **Munich. 11.0** (approx.), Close Down.

FREDRIKSSTAD.—See **Oslo.**

FREIBURG.—See **Stuttgart.**

GENEVA.—See **Radio-Suisse Romande.**

GENOA.—See **Turin.**

GLEIWITZ.—See **Breslau.**

GOTEBORG.—See **Stockholm.**

GRAZ.—See **Vienna.**

HAMAR.—See **Oslo.**

HAMBURG

Call ha (in Morse), **372 metres;** 1.5 kW. Relayed by **Bremen, 269. 8 metres; Flensburg, 227.4 metres; Hanover, 566 metres,** and **Kiel, 232.2 metres.**—**3.30 p.m.,** Concert by the Station Orchestra, conducted by Horst Platen. Soloist: Bernhard Hamann (Violin). Overture, Lord Spleen (Lothar); From the Fields and Groves of Bohemia (Smetana); Poème for Violin (Chausson); Melody from the Symphonic fantastique (Berlioz); Fröhliches Wandern (Kaun); Overture, Hamlet (Woyrsch). **4.30,** Talk: The Life of the Middle Classes in North Germany. **4.55,** Religion and Fable in North Germany—The Devil—Radio Sequence (Hermann Quistorf and Thomas Westerich). The Station Chamber Orchestra and Choir and Soloists. **5.50,** Frankfurt Exchange, and Market Prices. **6.0,** Talk: The Bavarian East Mark. **6.25,** Weather Report. **6.30,** Börries von Münchhausen reads from his own Ballads. **6.55,** The Flying Dutchman—Opera in Three Acts (Waguer), relayed from the Schiller Theatre. **9.30,** Time and News. **9.50,** Topical Talk. **10.0,** Dance Music from the Haus Siegler. In the interval at **10.20,** Ice Report.

HANOVER.—See **Hamburg.**

HEILSBERG

276.5 metres; 60 kW.; and **DANZIG, 453.2 metres.**—**12.5 p.m.,** Popular Music on Gramophone Records. In the interval at **12.20 p.m.,** News. **1.30,** Sponsored Programme with Gramophone Records. **2.0,** Agricultural Prices and Exchange Rates. **2.20,** Hints for the Housewife. **2.30,** Programme for Children. **3.0** (from **Danzig**), Talk for Parents. **3.30,** Concert by the Small Station Orchestra, conducted by Eugen Wilcken: Overture, The Hebrides (Mendelssohn); The Fables of La Fontaine (Mouton); Waltz, Nachtfalter (Joh. Strauss); Selection from The Prophet (Mayerbeer); Ein Liebesbrief in G Flat (Königsberger); Violin Solo, Serenade (Bertè); Festival Overture (Lortzing); In the interval, Humorous Topical Review. **4.50,** Health Talk. **5.15,** Agricultural Prices. **5.20,** Ice Report. **5.30,** Talk on Taxation. **5.55 (from Danzig),** Music of the Nations: Lizzi Benzinger (Scandinavian Songs); Adele Meyder and Rudolf Döblin ('Cello); 'Cello Selections: (a) Hamabdil (Bantock), (b) Pibroch (Bantock); Lizzi Benzinger: (a) Lykken (Lange-Müller); (b) Serenade (Lange-Müller). (c) Die heil'gen drei Könige (Lange-Müller), (d) Min Moder (Hannikainen), (e) The Anemone (Sibelius); Adele Meyder and Rudolf Döblin: Melody (Charpentier); Lizzi Benzinger: (a) Jungfrau underlind, (b) Visa i svensk folkton (Peterson-Berger), (c) Danish Folk Song (arr. Hägg), (d) Spring, spring ud, min Brombaerranke (Reesen); Adele Meyder and Rudolf Döblin; Serenade (Leoncavallo). **6.30,** Dance Music by the Small Station Orchestra and the Edmr Runde Band. In the interval, Weather and News. **8.30,** German Emigrants in Continents—Radio Sequence (Friedrich Carl Westphal). **9.30,** Weather, News, and Sports Notes. **9.45,** English and American Music on Gramophone Records. **11.0** (approx.), Close Down.

HILVERSUM

Announced **HUIZEN, 296.1 metres;** 20 kW. (7 kW. up to **4.40 p.m.**).—Programme of the Christian Radio Society (N.C.R.V.). **10.40 a.m.,** Trio Concert with Songs. **11.40,** Police Notes. **11.55,** Pianoforte Recital: Sonata in A, Op. 26 (Beethoven); Two Pieces (Schumann): (a) Intermezzo No. 4, Op. 26, (b) Aufschwung No. 2, Op. 12, Variations and Fugue, Op. 11, on an Original Theme (Paderevsky); Waltz in A, Op. 42 (Chopin). **12.40 p.m.,** Choral Music (on Gramophone Records). **12.55,** Trio Concert with Songs: Theme with Fourteen Variations, Op. 44 (Beethoven); Lied des Bauers (Grieg); Love Song (Stojovsky); Five Songs (Hugo Wolf): (a) Der Schäfer, (b) Blumengruss, (c) Hochbeglückt in deiner Liebe, (d) Verborgenheit, (e) Ueber Nacht; Andante con moto and Allegretto from the Trio Op. 62 (Saint-Saëns). **1.40,** Agricultural Talk. **2.25,** Interval. **2.40,** Reading. **3.10,** Trio Concert: Trio in B Flat, No. 4, for Violin, 'Cello, and Pianoforte (Beethoven); Trio in E Flat (Brahms); Trio in D Minor (Gade). **4.40,** Programme for Children. **5.40,** Gramophone Records of Sacred Music. **5.55,** Talk by Heer Amelink. **6.10,** Elementary English Lesson. **6.40,** Programme arranged by the Department of Buildings and Roads. **7.10,** Police Notes. **7.25,** News Bulletin. **7.40,** Carillon Recital from Nijkerk, with Introductory Talk. **8.40,** Talk. **9.10,** News. **9.25,** Concert by the Tiel Male Voice Choir and Symphony Orchestra. **10.25,** Gramophone Records of Variety Music. **11.10** (approx.), Close Down.

HORBY.—See **Stockholm.**

HUIZEN

Announced **HILVERSUM, 1,875 metres** 8.5 kW.—**11.40 a.m.** till Close Down, Programme of the Workers' Radio Society (V.A.R.A.). **11.40,** Concert by the Small V.A.R.A. Orchestra, conducted by M. Duchant. Dawn (Nobel); Grieg Potpourri (Urbach); In a Japanese Garden (Higgs); Nachtigall im Fliederbusch (Krome); Der Matador (Siede); Gramophone Records; Merry Dance (Haines); Selection from The Maid of the Black Forest (Jessel); Kleiner Wiener Marsch (Kreisler); Gramophone Records; Spiegelgavotte (Lincke); Swabian Dances (Krome); Selection from Gasparone (Millöcker). **1.25 to 1.40,** Interval. **1.40,** Programme for Women. **2.40,** Programme for Children. **5.10,** Organ Recital by J. Jong with Songs by Mlle. de Haas. Minuet (Mozart); Songs with Organ accompaniment: (a) Aria from Rinaldo (Händel), (b) Er weidet seine Herde (Händel); A Movement from Eine kleine Nachtmusik (Mozart); Singt den göttlichen Profeten (Graun); Chaconne (Durand); Liebestreu (Brahms); Wiegenlied (Brahms); Valse triste (Sibelius); Melody (Saint-Saëns); Oh, si les fleurs avaient des yeux (Massenet). **6.10,** Talk. **6.40,** Talk. **7.0,** Violin and Pianoforte Recital by Mlle. Wijngaarden (Violin) and M. Ligtelijn (Pianoforte); Sarabande et tambourin (Leclair); Sicilienne (Paradis); Gavotte (Gossec); Minuet (Beethoven); Hungarian Dance, No. 2 (Brahms); Mazurka (Wieniavski); Slav Dance in E Minor (Dvořák); Roumanian Dances (Bartok); Dance from La vida breve (Falla). **7.35,** S.O.S. Messages. **7.40,** Talk. **8.0,** Concert of Light Music by De Fliereluiters, conducted by H. de Groot. **8.50,** Light Music on Gramophone Records. **8.55,** Dramatic Programme by the V.A.R.A. Toonecl. **10.40,** News. **10.50,** Light Music on Gramophone Records. **11.40** (approx.), Close Down.

INNSBRUCK.—See **Vienna.**

KALUNDBORG.—See **Copenhagen.**

KATOWICE

408 metres; 16 kW.—**6.0 p.m.,** Talk on Canada. **6.15,** Announcements and Popular Music on Gramophone Records. **6.30 to 9.40,** See **Warsaw. 9.40,** Variety Music on Gramophone Records. **10.0,** Answers to Correspondents in French.

KIEL.—See **Hamburg.**

KLAGENFURT.—See **Vienna.**

KOSICE.—See **Prague.**

LANGENBERG

473 metres; 60 kW.—**12 Noon,** Concert conducted by Wolf: March, Triumph und Sieg (Müller-Hagen); Waltz, Die Königsmaid (Fetras); Overture, Paragraph 3 (Suppé); Selection from Carmen (Bizet); Zauberlied (Meyer-Helmund); Ballgeflüster (Meyer-Helmund); Klänge aus Rumänien (Dauber); Caprice (Moszkovsky); Dance of the Insects (Svendsen); Selection from Frederica (Lehár). In the interval at **1.0 p.m.,** News. **1.30,** Sponsored Programme with Gramophone Records. **2.30,** Economic Notes and Time. **2.50,** Programme for Children. **3.20,** Reading. **3.40,** Talk: The Organisation of a Child's Leisure Time. **4.0,** Hugo Wolf Concert for the Thirtieth Anniversary of his Death. The Station Orchestra, conducted by Kühn. Soloists: Klare Hansen (Soprano) and Helene Guermanova (Contralto). Commentary by Paul Gehly. Prelude and Entr'acte from Der Corregidor; Contralto Solos: (a) Mignon, (b) Anakreons Grab; Italian Serenade; Soprano Solo: Der Feuerreiter; Symphonic Poem, Penthesilea. **5.15,** Talk, arranged by the Post Office. **5.20,** Book Review. **5.45,** Weather, Time, Economic Notes and Sports Results. **6.0,** Talk on Social Questions. **6.20,** Health Talk. **6.35,** The World on Gramophone Records: The Mask, the Dance, and the Drama among Primitive Peoples. **6.55,** News. **7.0,** Carnival—a Variety Programme relayed from the Messehalle, **Köln-Deutz. 10.0,** News and Sports Results. **10.30,** Serenade, conducted by Wolf. **11.0** (approx.), Close Down.

LAUSANNE.—See **Radio-Suisse Romande.**

LEIPZIG

389.6 metres; 120 kW; and **DRESDEN, 319 metres.**—**11.0 a.m.,** Concert by the Leipzig Symphony Orchestra, conducted by Hilmar Weber. In the interval at **12 Noon,** News, Weather, Snow Report and Time. After the Concert, Exchange Quotations. **1.0,** Wireless Technical Talk. **1.30 to 2.35,** Interval. **2.35,** Economic Notes. **3.0,** Programme for Young People. **4.50,** Economic Notes, Weather and Time. **5.10,** Book Review. **5.35,** Italian Lesson. **5.55,** Programme to be announced. **6.5,** Talk: The Remedies for Black-legging. **6.30,** Concert of Old and New Dances by the Endé Orchestra: Quadrille, Freut euch des Lebens (Küchenmeister); Der lustige Ehemann (O. Straus); Polka from The Gipsy Baron (Joh. Strauss); New Dances; Mazurka, Busserl (Ziehrer); Waltz, Sektgeister (Urbach); Gallop, Auf der Rodelbahn (Paepke); New Dances; Polka, Im Kahlenbergerdörfel (Fahrbach); Ist das nicht chic? (Heuberger); Gallop, Durchs Ziel (Translateur); New Dances; Polka, Schneesternchen (E. Strauss); Waltz, Mein Lebenslauf ist Lieb' und Lust (Joh. Strauss); Stettiner Kreuzpolka (Schlichting). **8.0,** Topical Talk. **8.10,** News. **8.20,** The Great Magician Tartüffel—Drama in Three Acts with Song and Dance. **9.20,** News. **9.30** (approx.), Hugo Wolf Concert for the Thirtieth Anniversary of his Death; The Dresden String Quartet and Soloists: Elena Gerhardt and Albert Fischer (Songs). Albert Fischer: (a) Wer sich der Einsamkeit ergibt, (b) An die Türen will ich schleichen, (c) Wer nie sein Brot mit Tränen ass; Elena Gerhardt: (a) Heimweh, (b) Begegnung, (c) Anakreons Grab, (d) Gesang Weylas; Italian Serenade; Albert Fischer: (a) Der Tambour, (b) Gesellenlied, (c) Storchenbotschaft; Elena Gerhardt: (a) Herr, was trägt der Boden hier, (b) Ach, des Knaben Augen, (c) Wenn du zu den Blumen gehst, (d) Nein junger Herr, (e) Auf dem grünen Balkon. **10.30** (approx.), Close Down.

LINZ.—See **Vienna.**

LJUBLJANA

574.7 metres; 2.5 kW.—**4.30 p.m.,** Reading of Stories. **5.0,** Programme in English by the I.B.C. International Broadcasting Club Concert. Selection from White Horse Inn (Benatzky); Songs: (a) Stonecracker John, (b) The Wolf; Selection from Countess Maritza (Kálmán); Songs: (a) The Sergeant of the Line, (b) Rocked in the Cradle of the Deep; You are my Heart's delight (Lehár). **6.0,** Russian Lesson. **6.30,** Literary Programme. **7.0,** Programme from **Vienna. 9.0,** Time, News and Light Music on Gramophone Records.

LWOW

381 metres; 16 kW.—**6.10 p.m.,** Miscellaneous Items. **6.30,** See **Warsaw. 9.40,** Reading. **9.55,** See **Warsaw. 10.30** (approx.), Close Down.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—**7.0 p.m.,** Concert. O Donna Clara (Von Petersburski); Chanson bohémienne (Boldi); Los Banderillos (Volpatti); El cant del poble (Clavé); Serenade from Don Giovanni (Mozart); Plaisir d'amour (Martini); An Evening in Sorrento (Waldmann). **7.30,** Radio Gazette for Lyons and the South-East. **8.30,** Les Voitures versées—Opéra Comique (Boieldieu). News after the Opera.

MADRID

ARANJUEZ (EAQ), 30.43 metres; 20 kW.—**10.30 p.m.,** Variety Concert. **10.45,** Radio Chronicle. **11.0,** Variety Concert (contd.). **11.35,** Talk. **11.40,** Light Music. **12 Midnight** (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 424.3 metres; 2 kW.—**7.0 p.m.,** Chimes, Exchange, Literary Talk, and Request Gramophone Records. **7.30** (in the interval), Agricultural Talk. **8.15,** News Bulletin and Political Review. **8.30 to 9.30,** Interval. **9.30,** Chimes, Time, Political Review, Talk, and Concert by the Orfeon Donostiarra conducted by Gorostidi and the Symphony Orchestra conducted by Iarrocha, relayed from **San Sebastian, 353.2 metres. 11.45,** News Bulletin. **12 Midnight,** Chimes and Close Down.

MALMO.—See **Stockholm.**

MILAN.—See **Turin.**

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—**4.10 p.m.,** Marionette Play. **5.5,** Light Music on Gramophone Records. **5.15,** Talk for Workers. **5.25,** Brass Band Concert, conducted by F. Vitek. **6.0,** See **Prague. 6.15,** Relay from the Municipal Museum. **6.50** till Close Down, See **Prague. 10.0** (approx.), Close Down.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—**4.0 p.m.,** News. **4.10,** Announcements. **4.30,** Concert of Music by Bizet, Liszt, and Massenet. **5.30,** Symphony Concert from the Conservatoire. **8.0,** Talk in English: The Red Army. **8.55,** Time. **9.5,** Press Review.

MOTALA.—See **Stockholm.**

MUHLACKER.—See **Stuttgart.**

MUNICH

533 metres; 60 kW. Relayed by **Augsburg** and **Kaiserslautern, 560 metres;** and **Nürnberg, 239 metres.**—**4.0 p.m.,** Concert conducted by Erich Kloss: Overture, Le roi Pa dit (Delibes); Ein Märchen (Suk); Selection from The Valkyries (Wagner); Wedding Music (Jensen); Waldteufeleien—Potpourri of Waltzes (Weninger); Suite, Carnival Miniatures (Kaskel); Cradle Song (Ippolitov-Ivanov); March (Poldini). **5.15,** French Lesson. **5.35,** Talk on Hugo Wolf. **5.55,** Time, Weather and Market Prices. **6.5,** Talk. **6.25,** A Musical Patchwork (Bruno Aulich). **7.15,** Pianoforte Trio in B. Op. 8 (Brahms). **8.0,** Poems by Alexander Lernet-Holenia. **8.20,** Die lustigen Musikanten—Opera in two Acts (Siegfried Kallenberg), arranged for the Radio by the Composer. **9.20,** Time, Weather, News and Sports Notes. **9.45,** Concert, conducted by Erich Kloss. **11.0** (approx.), Close Down.

NAPLES.—See **Rome.**

NOTODDEN.—See **Oslo.**

OSLO

1,083 metres; 60 kW. Relayed by **Fredriksstad, 365.8 metres; Hamar, 574.7 metres; Notoddèn, 447.1 metres; Porsgrund, 253.2 metres; and Rjukan, 447.1 metres.**—**4.0 p.m.,** Chamber Music by the Bentz Quartet: Quartet in F (Schumann); Quartet in E (Dvorak). **5.0,** French Lesson. **5.30,** Programme for Boys. **6.0,** Announcements, Weather, and News. **6.30,** Talk: Norwegian Art since 1900. **7.0,** Time Signal. **7.1,** Concert by the Station Orchestra, conducted by Hugo Kramm; Soloist: Gunnar Knudsen (Violin): Academic Festival Overture (Brahms); Concerto for Violin and Orchestra (Saint-Saëns); Norwegian Rhapsody (Lom); Andante from the Italian Symphony (Mendelssohn); Hungarian Melodies (Dohnanyi); Selection from Cinderella (Coates); Marche lyrique (Chabrier). **8.0,** Literary Review. **8.30,** Agricultural Notes, Weather, News, and Topical Talk. **9.15,** Talk on Bridge, relayed from **Aulesund (247.4 metres). 9.45,** Dance Music by the Station Orchestra, conducted by W. Schubert. **11.0** (approx.), Close Down.

OSTERSUND.—See **Stockholm.**

FEB. 22nd **WEDNESDAY** *continued*

PALERMO

542 metres; 8 kW.—**7.0 p.m.,** Popolavoro Notes, Tourist Talk, Agricultural Report, and Giornale Radio. **7.20,** Light Music on Gramophone Records. **7.30** (in an interval), Time and Announcements. **7.45,** Variety Concert. First Movement from the Symphony in G Minor (Mozart); Tenor Solos: (a) Gia il sole del Gange (Scarlatti), (b) Russian Song (Tronchi); Air gai (Rameau); First Suite, Antiche danze ed arie (Respighi); Three Songs for Soprano and String Quartet (Pizzetti); Adagio and Finale from a Nonet (Spohr); Tenor Solos: (a) Romance from Act III of A Masked Ball (Verdi), (b) L'attesa (Bettinelli); Turkish March (Mussorgsky). In the interval, Talk. **9.0** (approx.), Programme of Songs. **9.55,** News Bulletin.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW. Time Signals (on **2,650 metres**) at **9.26 a.m.** and **10.25 p.m.** (Preliminary and 6-dot Signals).—**5.45 p.m.,** Le Journal Parlé. **7.20,** Weather Report. **7.30,** Programme for Young People. **8.0,** Scientific Talk. **8.15,** News Bulletin. **8.20,** Orchestral Concert, conducted by Edouard Flament; Soloists: M. Marchesini ('Cello) and M. Cantrelle (Violin); Selection from La Légende du point d'Argentan (Fourdrain); 'Cello Solo: Selection from Lilac Time (Schubert); Violin Solo: Selection from Madame Chrysanthème (Messager). **9.0** (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—**6.45 p.m.,** Journal Parlé. **7.0,** Concert of Popular Music on Gramophone Records. **7.30,** Organ Recital. **8.0,** Tourist Report. **8.15,** Interval. **8.30,** Sponsored Concert. **9.0,** Interval. **9.10,** Sponsored Concert. **10.10,** Dance Music by the Lido Orchestra. **11.0,** News.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—**6.45 a.m.,** Physical Culture. **7.30,** Weather and Physical Culture (contd.). **7.45,** Gramophone Records: Selection from Lilac Time (Schubert-Berté); Selection from Véronique (Messager). **8.0,** Press Review and Weather. **12 Noon,** Educational Talk. **12.15 p.m.,** Concert by the Station Orchestra: Selection from Les Cloches de Corneville (Planquette). **12.30,** Organ Recital from the Gaumont Palace: Overture, The Italian Girl in Algiers (Rossini); Whistling in the Dark (Suesse); Selection from Lakmé (Delibes); Waltz, Masquerade (Webster). **1.0,** Exchange. **1.5,** Orchestral Concert (contd.); Suite, The Three Bears (Coates); Selection from La Princesse de Trébizonde (Offenbach); Selection from Boccaccio (Suppé); Selection from Il ragno azzurro (Randegger); Selection from Le Sire de Vergy (Terrasse). In the interval at **1.30,** Exchange. **2.0,** Exchange. **3.45,** Exchange and Market Prices. **6.10,** Agricultural Talk. **6.40,** German Lesson. **7.0,** Medical Talk. **7.20,** Concert by the Radio Paris Orchestra: Bucoliques (Dulaurens); French Suite (Casadesus); Piece (Lähr). **7.45,** Commercial Prices and News. **8.0,** Literary Talk. **8.30,** News and Weather. **8.40,** Fashion Review by Mlle José. **8.45,** Variety Music on Gramophone Records. **9.0,** Concert by the Lamoureux Concert Society, conducted by Félix Hupka, relayed from the Salle Gaveau. Soloist: Alfred Piccaver (Tenor). First Symphony (Erahms); Songs: (a) Cielo e mare, from La Gioconda (Ponchielli), (b) Legend of the Graal, from Lohengrin (Wagner); Selection from Don Juan (R. Strauss); Three Songs (Strauss); Leonora, Overture No. 3 (Beethoven).

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW. Relayed by **W8XK** on **48.86 metres** and **25.27 metres.**—**9.0 p.m.,** Work-a-day Thoughts. **9.5,** Business News. **9.15,** Programme to be announced. **9.30,** Weather Report. **9.32,** Market Reports. **9.45,** Pianoforte Interlude. **9.50,** David Lawrence Dispatch. **9.55,** KDKA Artist Bulletin. **9.58,** Programme Announcements. **10.0,** Westinghouse Chef. **10.15,** Programme to be announced. **10.30,** The Singing Lady. **10.45,** Little Orphan Annie, from **New York.** **11.0,** Our Daily Food—by Maude and Cousin Bill, from **New York.** **11.15,** Time Signal. **11.16,** Weather Report. **11.17,** Teaberry Sport Review. **11.22,** Press News-Reeler. **11.27,** Strange Facts. **11.29,** Temperature Report. **11.30,** Sheer Romance. **11.45 to 3.15 a.m. (Thursday), New York** Relay. **11.45,** Today's News by Lowell Thomas. **12 Midnight,** Amos 'n' Andy. **12.15 a.m.,** Carlson Robison and his Barbasol Buckaroos. **12.30,** Five Star Theatre: Dramatisation of Short Stories. **1.0,** Eno Crime Club. **1.30,** Time Signal and Harriett Lee and her Leaders. **1.45,** Country Doctor. **2.0,** Adventures of Sherlock Holmes. **2.30,** Woodbury Programme with Morton Downey and Donald Novis. **3.0,** D. W. Griffith's Hollywood. **3.15,** Bridge School of the Air, by E. Hall Downes. **3.30,** Around the Cracker Barrel. **3.45,** Bradley Kincaid. **4.0,** Time Signal. **4.1,** Teaberry Sport Review. **4.11,** Temperature Report. **4.12,** Weather Report. **4.13,** KDKA Artist Bulletin. **4.15,** Press Last-minute News Flashes. **4.20,** Henry Halstead and his Californians. **5.0,** College Inn Orchestra, from **New York.** **5.30,** Time Signal and Good-night.

PORSGRUND.—See **Oslo.**

PRAGUE

488.6 metres; 120 kW.—**3.10 p.m.,** Concert by the Station Orchestra, conducted by Karel Ancerl. Overture, Wanda (Dvorák); Extracts from the Slovak Suite, Op. 32 (Novak); Waltz from Eva (Foerster); Ballet Music from Rosamund (Schubert); Waltz, Tales from the Vienna Woods (Joh. Strauss). **4.0,** Medical Talk. **4.10,** See **Moravská-Ustrava.** **5.5,** Agricultural Report. **5.15,** Talk for Workers. **5.25,** News in German. **5.30,** German Transmission: Review of New Books and Talk on Income Tax. **6.0,** Uncle Kropal celebrates his Birthday—Peasant Farce. **6.50,** News Bulletin. **7.0,** Talk on the following Transmission. **7.10,** Missa Solemnis in D, Op. 123 (Beethoven) for Four Solo Voices, Mixed Choir and Orchestra, relayed from the Lucerna Concert Hall. In the interval at **8.0,** Time Signal. **9.0,** Time Signal. **9.1,** News and Sports Notes. **9.15,** Running Commentary on the International Ice Hockey Championship, relayed from the Winter Stadium. **10.0** (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; **LAUSANNE, 680 metres;** and **GENEVA, 760 metres.**—**7.0 p.m.** (from **Geneva**). Talk: The Work of the League of Nations. **7.20** (from **Geneva**), Topical Talk. **7.30** (from **Geneva**), Choral and Orchestral Concert, conducted by E. Ansermet, relayed from the Victoria Hall. Soloists: Henri Denizot (Tenor) and Nelly Ansermier (Violin). Third Suite in D (Bach); Concerto in A for Violin and Orchestra (Mozart); Symphonic Poem, Le Rhône (Vuataz), conducted by the Composer; Suite, L'Arlésienne (Bizet).

REYKJAVIK

1,200 metres; 21 kW.—**8.30 p.m.,** Weather Report. **8.40,** Musical Programme and Announcements. **9.0,** Chimes. **9.2,** News Bulletin. **9.30,** Reading. **10.0,** Violin Solos by Thorarinn Gudmundsson, followed by Arias and The Nutcracker Suite (Tchaikovsky), on Gramophone Records.

RJUKAN.—See **Oslo.**

ROME

Call 1RO, 441 metres; 50 kW. Relayed by **Naples, 319 metres;** and **2RO, 25.4 metres.**—**7.0 a.m.,** Gymnastics. **7.15 to 7.30 a.m.,** Giornale Radio and Announcements. **11.30,** Weather and Light Music on Gramophone Records. **12 Noon,** Time and Announcements. **12.2 to 1.15 p.m.,** Orchestral Concert. Matador (Lovero); Song (Nicholls); Potpourri, Zeppelin (Mannecke); Pupazzetti giapponesi (Ranzato); Saxophone Solo (Escobar); Interlude from Adriana Lecouvreur (Cilea); Foxtrot, Carmen (Dostal); Organ Solo (Gangiberger); Moonlight (Gauwin); Kiss for Kiss (Rose). In the interval at **12.30,** Giornale Radio and Exchange. **3.45,** Programme for Children. **4.10,** Announcements. **4.15,** Exchange and Giornale Radio. **4.30 to 5.30,** Vocal and Instrumental Concert; Pianoforte Solos: (a) The Harmonious Blacksmith (Handel), (b) Gavotte (Sgambati); Soprano Solos: (a) Elsa's Dream, from Lohengrin (Wagner); (b) Arioso, from the First Act of Loreley (Catalani); Pianoforte Solos: (a) Etude (Chopin), (b) Danza di Olaf (Pick-Mangiagalli); Soprano Solos: (a) Aria from Adriana Lecouvreur (Cilea), (b) Ave Maria, from Othello (Verdi); Pianoforte Solo: Scherzo (Bajardi). **6.10 (Naples)** Shipping and Sports Notes. **6.15,** Agricultural Report and Popolavoro Notes. **6.20,** Giornale Radio. **7.0,** Time, Announcements and Light Music on Gramophone Records. **7.15,** Medical Talk. **7.30,** Sports Notes and Tourist Report. **7.45,** Relay of an Opera. In the interval: Reading of Poems, Talk on Science and News.

SALZBURG.—See **Vienna.**

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 379.5 metres; 50 kW. Relayed at intervals by **W2XAF** on **31.48 metres,** and by **W2XAD** on **19.56 metres.**—**7.30 p.m. to 12.15 a.m. (Thursday), New York** Relay. **7.30,** Westminster Choir. **8.0,** Two Seats in the Balcony. **12 Midnight,** Soloist. **12.15 a.m.,** Stock Reports. **12.30 to 2.0, New York** Relay. **12.30,** Three Keys, Harmony Trio. **12.45,** The Goldbergs. **1.0,** The Royal Vagabonds with Ken Murray. **1.30,** The Shadow, Mystery Drama. **2.0,** Musical Programme. **2.15,** Three Shades of Blue—Male Trio. **2.30,** Supper Club Orchestra. **3.0,** Programme Resumé.

SCHWEIZERISCHER LANDESSENDER

BEROMUNSTER, 459 metres; 60 kW.; **BASLE, 244.1 metres,** and **BERNE, 245.9 metres.**—**9.20 a.m.,** Broadcast for Schools: En refard à la maison—a French Instructive Sketch (Schenk). **9.50 to 11.28,** Interval. **11.28,** Time Signal from Neuchâtel Observatory. **11.30,** Weather and News. **11.40,** Extracts from Il Trovatore—Opera (Verdi), on Gramophone Records. **12.10 p.m.,** Italian Folk Music and Songs on Gramophone Records. **12.35 to 12.45,** Weather and Exchange. **2.30,** Marches, Waltzes and Descriptive Music, on Gramophone Records. **3.30** (from **Basle**), Programme for Children. **4.0,** Cinema Organ Solos on Gramophone Records. **4.30 to 4.35,** Weather. **5.30** (from **Zürich**), Talk: The Cultural Significance of the Trades Union Movement. **6.0,** Time, Weather and Market Prices. **6.15** (from **Zürich**), English Lesson. **6.45** (from **Zürich**), Concert for Swiss People Abroad: The Radio Orchestra, the Freundschaft Song and Yodel Club and Soloists. **8.30,** Weather and News. **8.40,** Concert by the Radio Orchestra. **9.15** (approx.), Close Down.

SOTTENS.—See **Radio-Suisse Romande.**

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by **Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,348 metres; Ostersund, 770 metres;** and **Sundsvall, 542 metres.**—**4.5 p.m.,** Orchestral Concert: Valse caprice (Rubinstein); Hungarian Melodies and Dances (arr. Garaguly); Melody (Wessländer); Tango, Kleine Madonna (Wetzel-José); Potpourri, Servus Wien (Dostal). **4.45,** Reading. **5.15,** Om vinter kväll, for Soloists, Choir and Pianoforte (Lindblad). **5.55,** Talk on Esperanto, relayed from **Uppsala (453.2 metres).** **6.15,** Weather and News. **6.30,** Talk. **7.0** (from **Göteborg**), Symphony Concert. Conductor: Tor Mann. Suite No. 1 in C for Two Oboes, Bassoon and Strings (Bach, arr. Weingartner); Concert Music for String Orchestra and Brass Instruments (Hindemith); Symphony No. 1 in E Minor, Op. 39 (Sibelius). **8.30,** Reading. **8.45,** Weather and News. **9.0,** Dance Music by the Enders Orchestra, relayed from the Bern Hall. **10.0** (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—**11.30 a.m.,** Brahms Music on Gramophone Records. **12.45 p.m.,** News. **1.0,** Time and Exchange. **1.5,** Gramophone Concert of Light Music. **2.0 to 4.45,** Interval. **4.45,** Talk in German on Electricity. **5.0,** Orchestral Concert, conducted by Roskam: Pasodoble, Copa de Montilla (Mordrez); Foxtrot, I'll do my best to make you happy (Noble); Foxtrot, Crazy People (Leslie and Monaco); Waltz, I'll never have to dream again (Newman and Jones); Foxtrot, What makes you so adorable? (Tobias and Rose); Foxtrot, Somebody loves you (Tobias and Rose); Tango, Dans mon rêve bleu (Bazant); Melody (Mackeben); Foxtrot, We just couldn't say goodbye (Woods); Waltz, Wine, Woman and Song (Joh. Strauss); Foxtrot, Green Song (Allouche); Foxtrot, By a rippling Stream (Petkere); Air from Nina Rosa (Romberg); Foxtrot, My Sweet Virginia (Klages-Meskill-Rose); Foxtrot, Love is the sweetest Thing (Noble); Pasodoble, Ayerbe (Colliner). **6.0,** Trio Concert, relayed from **Lille (265.4 metres).** **7.0,** Legal Talk in French. **7.15,** Light Music on Gramophone Records. **7.30,** Time and News. **7.45,** Variety Music on Gramophone Records. **8.25,** Lottery Results. **8.30,** Concert by the Municipal Orchestra, relayed from the Palais des Fêtes; Conductor: Hermann Scherchen: Second Symphony (Beethoven); Concerto grosso (Kaminsky); Fourth Symphony—the Romantic (Bruckner). **10.30,** Popular Music on Gramophone Records. **11.0,** Quintet Concert, relayed from **Radio Coloniale, Paris (25.63 metres);** Conductor: Jean Clergue: Symphony (Mozart); Pastorale (Franck); Scherzo (Lalo); Valse des guitareros (Mesquita); Selection from Pas sur la bouche (Yvain). **12 Midnight** (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and **FREIBURG, 570 metres.**—**12.30 p.m.,** Concert from **Langenberg.** **1.0,** Sponsored Music. **1.15,** Sponsored Music, relayed from **Mannheim.** **2.0,** Radio Report on the International Ski-ing Championship on the Feldberg. **3.0,** Programme for Children. **4.0,** See **Munich.** **5.0,** Time, Weather, and Agricultural Notes. **5.10,** Talk on Wilhelm Konrad von Röntgen. **5.35** (from **Freiburg**), Talk by Dr. Aly. **6.0,** Time and News. **6.15,** Concert by the Philharmonic Orchestra; Conductor: Gustav Görlich; Soloists: Gretl Winkler (Soprano) and Hans Hanns (Tenor): Overture, Karnevalstreiche (Richter); Dresden Carnival 1745 from the Friedemann Bach Suite (Leuschner); Pizzicato Serenade, Pierrette (Brase); Concou (Tarelli); Two Duets from The Count of Luxembourg (Lehár); Polka from A Waltz Dream (O. Straus); Duet, Loreley, schöne Zaubermaid from Die Fachingsfee (Kálmán); Duet, Mädelchen von Montmartre from Die Tanzgräfin (Stolz); March from The Girl in the Taxi (Gilbert); Two Duets from The Gipsy Princess (Kálmán). **7.15,** See **Frankfurt.** **8.0,** Recital of Hugo Wolf's Songs for the Thirtieth Anniversary of his Death. **8.30,** Concert, relayed from the Sängerhaus: Symphony No. 2 (Beethoven); Concerto grosso (Kaminsky); Fourth Symphony (Bruckner). In the interval, Time, News, Weather, and Programme Announcements. **10.30,** Report on the Six Days' Racing, from the Town Hall. **11.0** (approx.), Close Down.

SUNDSVALL.—See **Stockholm.**

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—**6.0 p.m.,** News Bulletin. **6.15,** Operatic Melodies. **6.30,** Impressions d'Italie—Orchestral Suite (Charpentier). **6.45,** Accordion Solos. **7.0,** Classical Music: Minuet in G (Beethoven); Selection from Idomenco (Mozart). Talk in the interval. **7.15,** News and Exchange. **7.25,** Local News. **7.30,** Songs. **7.45,** Music by a Viennese Orchestra. **8.15,** Opéra-Comique Music. **8.30,** Operatic Music. **8.45,** Sound Film Music. **9.0,** Concert of Variety Music. **10.15,** North African News. **10.30,** Concert for Listeners in Morocco. **11.0,** Military Music. **11.15,** Operetta Music. **11.30,** Programme in English by the I.B.C. Announcer: H. K. Hitchcock. Song Recital: Take a Pair of Sparkling Eyes (Sullivan); By the Waters of Minnetonka (Licurance); O Sole Mio (di Capua); Homing (del Riego); My little Irish Cottage (Summers); Roses of Picardy (Haydn Wood); O dry those Tears (del Riego); O Lovely Night (Landon Ronald). **12 Midnight,** Weather and Announcements. **12.5 a.m. (Thursday),** Orchestral Music. **12.30** (approx.), Close Down.

TRIESTE

247.7 metres; 10 kW. **4.0 to 6.30 p.m.,** See **Turin.** **6.30,** Concert from the Café Dante. **7.0** till Close Down, See **Turin.**

TRONDHEIM.—See **Oslo.**

TURIN

273.7 metres; 7 kW. Relayed by **Milan, 331.5 metres; Genoa, 312.8 metres;** and **Florence, 500.8 metres.**—**4.0 to 5.0 p.m.,** Tenor and Soprano Song Recital. **5.35,** Giornale Radio, Agricultural and Popolavoro Notes. **6.0,** Variety Music on Gramophone Records. In the intervals at **6.20,** Giornale Radio, Time, Announcements, and Tourist Report. **7.0,** Giornale Radio and Weather. **7.15,** Medical Talk. **7.30,** A Comedy in Three Acts, followed by Orchestral Concert: Selection from Vecchia Milano (Vittadini); Two Pieces (Testi): (a) Aprile, (b) Ideale; Selection from La Traviata (Verdi); Selection from Il Natale di Pierrot (Monti). **10.0,** Giornale Radio.

VATICAN CITY

19.84 metres (Morning), and **50.26 metres (Evening);** 10 kW.—**10.0 to 10.15 a.m.,** Religious Information in Spanish. **7.0 to 7.15 p.m.,** Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by **Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 245.9 metres;** and **Salzburg, 218.5 metres.**—**3.15 p.m.,** Talk: The Science of Ski-ing. **3.25,** Talk on Educational Methods. **3.55,** Pianoforte Concerto (Gershwin), on Gramophone Records, followed by New Gramophone Records. **5.0,** Talk: Illnesses caused by too Strenuous Sport. **5.25,** Talk: In the Lead Mines. **5.50,** Talk: Adventures Among Men and Animals in the Kurile Islands. **6.15,** Time, Weather and Programme Announcements. **6.25,** Hugo Wolf Song Recital by Berta Kiurina (Soprano) and Josef Manowarda (Bass). Two Goethe Songs: (a) Anakreons Grag, (b) Frühling übers Jahr; Fussreise; Begegnung; Nixe Binsenfuss; Der Schreckenberger; Verschwiegene Liebe; From the Spanish Song Book: (a) Nun wandere, Maria, (b) Klinge, klinge, mein Pandero; From the Italian Song Book: (a) Gesegnet sei, (b) Und willst du denen Liebsten sterben sch'n; Wandl' ich in den Morgentau; Wohldenk' ich oft; Biteroff. **7.15,** Carnival—Radio Potpourri in a Prologue and Two Parts (Dr. Lothar Riedinger), by the Vienna Volksoper Chorus, Josef Holzer's Orchestra, Charly Gaudriots Jazz Band and Soloists. **9.0,** News, Weather and Announcements. **9.15,** Talk on the Austrian Musical Festival. **9.25,** Concert from the Hotel Krantz-Ambassador.

WARSAW

1,411 metres; 120 kW.—**10.40 p.m.,** Press Review. **10.50,** Weather Report for Aviation. **10.58,** Time Signal and Bugle Call from St. Mary's Church, Cracow. **11.5,** Programme Announcements. **11.10,** Light Music on Gramophone Records. **12.20 p.m.,** Weather Forecast. **12.25 to 2.10,** Interval. **2.10,** Announcements. **2.15,** Economic Notes. **2.30,** Boy Scouts' Report. **2.35,** Programme for Children. **3.0,** Popular Music on Gramophone Records. **3.20,** Talk: The Development of Athenian Democracy, relayed from **Wilno (563 metres).** **3.40,** Talk in Ukrainian. **4.0,** Hindu Songs—Talk, with Illustrations on Gramophone Records. In an interval, Announcements. **4.40,** Economic Talk. **4.55,** Programme Announcements. **5.0,** Literary Talk. **5.20,** News. **5.25,** Light Orchestral Music, relayed from the Adria. **6.0,** Miscellaneous Items. **6.20,** Agricultural Report. **6.30,** Literary Talk. **6.45,** Radio Journal. **7.0,** Jim and Jill—Operetta (Ellis). **8.45,** Sports Notes. **8.50,** Radio Journal. **8.55,** Chamber Music by the Station String Quartet; J. Kaminski (Violin), M. Turseh (Violin), J. Gornowski (Viola), and M. Neuteich ('Cello): Quartet in D (Boccherini); Quartet in E Minor (Verdi). **9.40,** Talk. **9.55,** Aviation Weather Report and Police Notes. **10.0,** Dance Music, relayed from the Adria.

ZURICH.—See **Schweizerischer Landessender.**

THURSDAY

FEBRUARY THE TWENTY-THIRD

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL	"Variety," a recital of gramophone records. Concert from the Town Hall, Birmingham. Mr. Desmond MacCarthy: "The Art of Reading." "March Hares," feature programme. Orchestral concert.
LONDON REGIONAL	Chamber music. Organ music. Military Band concert. Royal Philharmonic Society's concert, relayed from Queen's Hall.
MIDLAND REGIONAL	"Contrasts," orchestral concert. Choral concert.
NORTH REGIONAL	A relay from Manchester Hippodrome. Hallé Society concert from Free Trade Hall, Manchester. Pianoforte recital.
WEST REGIONAL	Organ music. Light music. A "Woodland" orchestral programme.
SCOTTISH REGIONAL	Mr. John Stephen: "North Sea Fruit." "No More Illusions," a slightly cynical symposium by the Silver Citizens. Choral and orchestral concert, relayed from Edinburgh.
BELFAST	Organ recital. Orchestral concert. Chamber music.

ABROAD

BERO-MUNSTER	Act 2 of "Tristan and Isolde" (Wagner), relayed from the Municipal Theatre, Zürich.
COPENHAGEN	The Station Symphony Orchestra, conducted by F. Busch.
ROME	Symphony concert, conducted by Stravinsky.
WARSAW	Opera: "The Barber of Seville" (Rossini), from the Grand Theatre.

ATHLONE

413 metres; 60 kW.; and CORK, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Weather Report, Stock Report, and Light Music on Gramophone Records. **6.0,** Popular Music on Gramophone Records. **6.15,** Programme for Children. **7.0,** Light Music on Gramophone Records. **7.10,** Dublin Cattle Market Report. **7.20,** News Bulletin. **7.30,** Time Signal. **7.31,** French Lesson. **7.45,** Literary and Dramatic Talk. **8.0,** Concert by the Station Orchestra. **8.20,** Tenor Solos by R. Midgley. **8.30,** Talk by the Rev. A. H. Macpherson: Lewis Carroll. **8.50,** Song Recital by Mr. and Mrs. P. J. Duffy. **9.20,** Pianoforte Recital by Olive Williams. **9.35,** The Station Orchestra. **10.0,** Dance Music on Gramophone Records. **10.30,** Time Signal, News, Weather Report, and Close Down.

BARCELONA

RADIO-BARCELONA, Call EAJ1, 348.8 metres; 8 kW.—6.0 p.m., Trio Concert: Selection from Los flamencos (Vives); Granada (Albéniz); Melody (Ross); Selection from La infanta de los bucles de oro (Serrano); Lament and Dance from Impresiones liricas (Pacheco); Escena gitana (Perelio). In the interval at **6.15,** Talk. **7.0,** Request Gramophone Records. **7.30,** Exchange Quotations and Talk in Catalan. **8.0,** Light Music on Gramophone Records, followed by News Bulletin. **9.0,** Chimes from the Cathedral, Weather Forecast, Exchange Quotations, and Market Prices. **9.5,** An Opera, relayed from the Gran Teatro del Liceo. **11.0** (in an interval). News Bulletin. **12 Midnight** (approx.). Close Down.

BARI

269.8 metres; 20 kW.—7.0 p.m., Agricultural Report, Tourist Talk and Dopolavoro Notes. **7.20,** Giornale Radio and Weather Forecast. **7.30,** Time Signal and Announcements. **7.35,** Light Music on Gramophone Records. **7.45,** Relay of an Opera from the Teatro Petruzzelli. In the intervals: Art Notes and Reading. News Bulletin after the Opera.

BASLE.—See **Schweizerischer Landessender.**

BELGRADE

430.4 metres; 2.8 kW.—6.30 p.m., Quartet in A for Pianoforte, Violin, Viola and 'Cello (Chausson). **7.5,** Talk on the following Relay. **7.15,** See **Warsaw.** In the interval at **8.30,** News Bulletin.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—12.35 p.m., News Bulletin. **1.0,** Gramophone Concert from **Berlin (Witzleben). 2.0,** Musical Programme for Children. **2.30,** Weather and Exchange. **2.45,** Das Buch vom Bürgen (Emil Bischoff), read by the Author. **3.0,** Talk for Women: Women's Social Mission. **3.30,** Concert from **Berlin (Witzleben). 4.10,** Talk on Philosophy. **4.30,** Chamber Music—Recital of Eighteenth Century Songs by Lisa Steffens (Soprano): Five Songs (Telemann): (a) Pastorell, (b) Die Einsamkeit, (c) Glück, (d) Wind, (e) Das Frauenzimmer; Die Wassernymphe (J. G. Neefe); Nonnenlied (Ph. E. Bach); Three Songs (J. P. A. Schulz): (a) Beim Tode der Geliebten, (b) Wiegenlied, (c) Heureigen; Wanderers Nachtlied (J. F. Reichardt); Wo geht's Liebchen? (Zelter). **5.0,** Talk: Rogney in Olden Days. **5.30,** Trio, Op. 47 (Paul Hindemith). **5.55,** Weather and Announcements. **6.0,** German Lesson for Germans. **6.30** A Poem. **6.35,** Agricultural Talk. **7.0,** Mozart—Father and Son—A Radio Sequence from Letters and Music. **8.0,** Talk on Winter Relief. **8.15,** Programme from **Frankfurt. 9.10,** Weather, News, and Sports Notes. **9.45,** Weather Report for Shipping **10.0,** Dance Music from **Berlin (Witzleben). 11.0** (approx.), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—3.30 p.m., Concert of Zither Music. **4.10,** Concert of Choral Music by Berlin Composers: O crux ave (Kurt Doebler); Erinnerung (von Leixner); Es ging ein Duft durch die Frühlingsnacht (Gencke); Proömion (Georg Vollerthun); Frauenklage (Burggraf zu Regensburg); Landsknechts-Trinklied (Paul Hindemith). **4.30,** Talk: Academic Barriers to the Professions. **4.50,** Talk for Young People: Forgotten Cities—Babylon. **5.10,** Brahms Recital by Prof. Walter Rehberg (Pianoforte): Pianoforte Pieces, Op. 118: (a) Intermezzos in A Minor and A, (b) Ballad in G Minor, (c) Intermezzo in F Minor, (d) Romance in F (e) Intermezzo in E Flat Minor, (f) Scherzo in E Flat Minor, Op. 4. **5.40,** Hungarian Dances (Brahms), on Gramophone Records; Dances Nos. 1 and 3; Dances Nos. 5 and 6. **5.55,** The Witzleben Station informs its Listeners. **6.0,** Topical Talk. **6.10,** Help for the Unemployed—Talk by D. Roland Brauweiler. **6.35,** Concert of Light Music from the Traube Weinrestaurant. **8.10,** The Eighth Symphony in C Minor (Bruckner), relayed from the Academy of Music. **9.15,** Weather, News and Sports Notes, followed by Dance Music from the Rheinterrasse of the Haus Vaterland. **11.0** (also on **Zeesen, 31.38 metres**), How to become a racing Motorist—A Radio Play (Manfred von Brauschitsch). Music by Walter Gronostay.

BERNE.—See **Schweizerischer Landessender.**

BEROMUNSTER. — See **Schweizerischer Landessender.**

BODEN.—See **Stockholm.**

BODO.—See **Oslo.**

BRATISLAVA

279 metres; 14 kW.—3.10 p.m., See **Brno. 4.10,** See **Prague. 4.20,** See **Brno. 4.50,** Popular Music on Gramophone Records. **5.5,** Milan Lichard Programme on his Eightieth Birthday. **6.0,** See **Prague. 6.10,** Economic Review. **6.25** till Close Down, See **Prague. 10.0** (approx.), Close Down.

BREMEN.—See **Hamburg.**

BRESLAU

325 metres; 60 kW.; and GLEIWITZ, 253 metres.—10.50 a.m., Orchestral Concert, conducted by Hermann Behr: An den Frühling (Grieg); Norwegian Wedding Procession (Grieg); Selection from Lakmé (Delibes); Styrian Dances (Kienzl); Waltz, Die Werber (Lanner); Song from Das verwünschene Schloss (Millöcker); Two Spanish Dances (Moszkovsky); Selection from Der arme Jonathan (Millöcker); Overture, Fatinitza (Suppé); Selection from Casanova (Strauss-Benatzky); Waltz, Freut Euch des Lebens (Strauss). In an interval at **12.10 p.m.,** Weather Forecast. **12.45,** Time, Weather, News and Exchange. **1.5,** Gramophone Concert: Overture, The Secret Marriage (Cimarosa); Selection from The Magic Flute (Mozart); Two Pieces (Rachmaninov): (a) Prelude in C Sharp, (b) Prelude in G Minor; Two Songs from The Dubarry (Millöcker-Mackeben); Selection from Schön ist die Welt (Lehar). **1.45,** Sponsored Programme with Gramophone Records. **2.10,** Market Prices. **2.40,** Talk: Lectures and Concerts for March in Breslau. **2.50,** Book Review. **3.10,** Pianoforte Duets: Sonata in F (Mozart); Variations on a Theme in C (Beethoven). **3.30,** See **Heilsberg. 4.30,** Agricultural Market Prices and Programme for Children. **4.50,** Talk with Gramophone Illustrations: Haydn's Spieluhr. **5.20,** Programme to be announced. **5.35,** Talk for Workers. **6.0,** Variety Programme with Unusual Gramophone Records. **7.0,** Talk: Provincial Silesian Museums. **7.30,** Concert of Dance Music and Light Music by the Silesian Symphony Orchestra, conducted by Gerhard Ewald Rischka. **9.10,** Time, Weather, News, Sports Notes and Programme Announcements. **9.30,** Esperanto Lesson. **9.40,** Talk: Young People in the Country—Rural Life and Customs. **10.0** (approx.), Close Down.

BRNO

342 metres; 35 kW.—3.10 p.m., Popular Concert, conducted by P. Nevoral. **4.10,** Talk for Children. **4.20,** Concert for Children. **4.50,** Educational Talk. **5.0,** Literary Review. **5.15,** See **Prague. 5.25,** German Transmission: News, Sports Report, and Scientific Talk. **6.0** till Close Down, See **Prague. 10.0** (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—12 Noon, Gramophone Concert Overture, The Thieving Magpie (Rossini); Symphonic Entr'acte from Messidor (Bruneau); Prelude No. 3 (Rachmaninov); Tarantella (Cui); Rêverie for Horn (Glazunov); Scherzo-Valse (Chabrier); Slav Rhapsody (Friedemann); Hopak from The Fair at Sorochinsk (Mussorgsky); An Evening in Seville (Haslinde); Rheinländer; On the Mountains; Suite of Popular Russian Airs; Pomp and Circumstance (Elgar). **1.0 p.m.,** Journal Parlé. **1.10,** Concert by the Small Station Orchestra, conducted by P. Leemans; Soloist: M. Wigy (Violin); Pasodoble (Alfonso); Waltz Potpourri (Weber); Minuet, Petit Trianon (d'Agrèves); Selection from Hallelujah (Youmans); Violin Solo: Serenade (Drdla); Oriental Suite (Popy); Tango, For you! (Rotter-Rubens); Foxtrot, Dizzy Fingers (Confrey). **5.0,** Strauss Waltzes by the Symphony Orchestra, conducted by Jean Kumps: Tales from the Vienna Woods; The Blue Danube; Waltz from Wienerblut. **5.30,** Programme for Children. **6.0,** Talk. **6.15,** Military Band Concert, relayed from Quaregnon: Second Symphonic Waltz (Gilson); Ballet Music from Faust (Gounod); Selection from Samson and Delilah (Saint-Saëns); Interlude for Saxophone and Pianoforte. **7.15,** Talk for Workers. **7.30,** Sports Notes. **8.0,** Military Band Concert, relayed from Quaregnon. **8.20,** Concert by the Quaregnon Choral Society. **8.45,** Talk, illustrated by Songs. **9.20,** Accordion Music. **9.45,** Military Band Concert (contd.). **10.0,** Journal Parlé. **10.10,** Gramophone Concert. Part I.—Dances, Old and New: Schottische, Perruche et Perroquet (Corbin); Polka, Sautez Bébés (Paradis); Waltz, La Gitana (Bucalossi); Tango (Bucino); Foxtrot, Phonomanie (Avignon); Tango, Nêné (Polito). Part II.—Modern Symphony Music: Selection from Daphnis et Chloé (Ravel); Eclogue (Rabaud); Ronde burlesque (Schmitt). **11.0** (approx.), Close Down.

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW. Programme in Flemish.—**12 Noon,** Concert by the Small Station Orchestra, conducted by P. Leemans; Soloist: Berthe Briffaux (Songs): Overture, Il Seraglio (Mozart); Valse-Scherzo (Tchaikovsky); Violin Solo Tambourin chinois (Kreisler); Songs (Grieg): (a) Morning, (b) Solveig's Song, (c) To Spring; Four Songs; Flemish Procession (Leemans); Polonaise for Pianoforte (Chopin); Overture, Masaniello (Auber). **1.0 p.m.,** Journal Parlé. **1.10,** Light Music on Gramophone Records. **5.0,** Concert by the Radio Orchestra, conducted by Charles Walpot, K.V.R.O.; Strijdlied (Meulemans); Rhapsodie Dehomaéene (De Boeck); Andante and Allegro (Händel); Ballet Music from Les deux pigeons (Messager); Ballet Music from Gretna Green (Guiraud). **5.45,** Programme for Children. **6.30,** Programme by the J.V.K.A. **7.15,** Talk. **7.30,** Talk for Women. **8.0,** Gramophone Concert: Loin du bal (Gillet); The Mill in the Black Forest (Eilenberg); 'Way down South (Myddleton); Potpourri, Das Beste vom Besten (Dostal). **8.30,** Concert by the K.V.R.V. **8.55,** Talk on Bruges. **9.10,** Carillon Recital: Vogeliedje (Vermeulen); Serenade from Milenka (Blockx); Ave Maria (Schubert); Heeft her noosje milde geuren (Benoit). **9.25,** K.V.R.V. Concert (contd.). **9.55,** Evening Prayer. **10.0,** Journal Parlé. **10.10,** K.V.R.O. Concert (contd.). **11.0** (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—4.0 p.m., Concert of Light Music and Romanian Music by the Dinico Orchestra. **5.0,** News and Time Signal. **5.10,** Talk. **5.25,** Concert by the Dinico Orchestra (contd.). **6.0,** Talk on Romania. **6.30,** Relay from the Opera House. In the intervals, News.

BUDAPEST

550 metres; 18.5 kW.—Programme also relayed on 840 metres from 7.0 to 11.0 p.m. 4.45 p.m., Concert of Operetta Melodies on Gramophone Records. **5.30,** Reading. **6.20** (approx.), Dance Music from the Café New York. **6.45,** Talk for Workers. **7.0,** A Comedy (Koloman Csatho). **9.0,** News Bulletin. **9.15** (approx.), Concert by the Budapest Concert Orchestra, conducted by Wilhelm Komor: Selection from The Queen's Kerchief (Joh. Strauss); Selection from Die Moderne Eva (Gilbert); Variations on a German Folk Song in the Style of Various Masters (Ochs); Gavotte and Dance Intermezzo; Waltz (Ziehrer); Selection from Frau Luna (Lincke); Selection from Zigeunerprimas (Kálmán); Genrebild (Wieschendorff); The Tigger's Dream (Myddleton); Polka (Strauss). **10.30,** Concert of Cigány Music from the Café Spolarich.

CASSEL.—See **Frankfurt.**

COPENHAGEN

281 metres; 0.75 kW.; and KALUNDBORG, 1,153 metres; 7.5 kW.—11.0 a.m., Time and Chimes from the Town Hall. **11.5,** String Ensemble Concert, conducted by Max Skalka, relayed from the Hotel d'Angleterre. **1.0 p.m. to 2.0,** Interval. **2.0,** Orchestral Concert, conducted by Lanny Grøndahl: Soloist, Sophie Finn Hoffmann (Songs): March (v. Blon); Waltz, Kaufmanns Kasino-Tänze (Gungl); Fantasia napolitana (Boccalari); Rhapsody, España (Chabrier); Polka, Mester Erik (Lumbye); Triumphal March (Meyerbeer); Four Songs; Ballet Music and March from William Tell (Rossini); On the Wings of Song (Mendelssohn); Fantasia on Scottish Songs and Dances (Bodewalt-Lampe); Simple aveu (Tomé); Waltz, Estudiantina (Waldteufel); March (Latann). **4.0,** Programme for Boys. **4.40,** Exchange and Fish Market Prices. **4.50,** Talk on Folk Songs. **5.20,** English Lesson. **5.50,** Weather Forecast. **6.0,** News. **6.15,** Time Signal. **6.16,** Talk, Religious Life in other Countries—the English Church. **6.45,** Danish Lesson. **7.10,** Concert relayed from the State Broadcasting Building. The Station Symphony Orchestra, conducted by Fritz Busch: Soloist, Rudolf Serkin (Pianoforte): Symphony No. 7 in C (Schubert). Ten Minutes Interval. Pianoforte Concerto in G, No. 4, Op. 58 (Beethoven); Overture, Oberon (Weber). **9.15,** News. **9.30,** Readings (Guy de Maupassant). **9.50,** Dance Music from the Lodberg Restaurant. In the interval at **11.0,** Time and Chimes from the Town Hall. **11.30** (approx.), Close Down.

CORK.—See **Athlone.**

DANZIG.—See **Heilsberg.**

DRESDEN.—See **Leipzig.**

DUBLIN.—See **Athlone.**

FECAMP

223 metres; 10 kW.—12 Noon, Light Music on Gramophone Records. **12.30 p.m.,** News Bulletin. **12.45,** Programme for Children. **6.0 to 7.0,** Programme in English by the I.B.C. C. Danvers Walker, R. Chene and B. McNab Announcing. **6.0,** Violin Recital for Brighton Listeners. Spanish Dance (Falla); Cavatina (Raff); Caprice Viennois (Kreisler); Orchestra: Serenade (Pierné); Tambourin Chinois (Kreisler); Meditation from Thaïs (Massenet); Serenade to Nicolette; Salut d'amour (Elgar). **6.30,** Concert for Hove Listeners. The Cuckoo Waltz (Jonasson); Songs: (a) Blackbird's Song (Scott), (b) A Brown Bird singing (Haydn Wood), (c) The Last Rose of Summer (Moore), (d) Down in the Forest (Landon Ronald), (e) I think of you my Sweet (Haydn Wood); Pipes of Pan (Monckton); The Toymaker's Dream (Golden). **7.0,** Local News. **7.15,** Light Music on Gramophone Records. **7.30,** Radio Gazette. **8.0,** The Listeners' Half-Hour and News. **8.30,** Concert, relayed from the Town Hall, Rouen. **10.0** till Close Down, Programme in English by the I.B.C. **10.0,** Dance Music. **11.0,** Music from Sound Films. Selection from Love me To-night; Song, I'll stay with you, from There goes the Bride; Song, I want to cling to Ivy from Jack's the Boy; Please, from The Big Broadcast; Song: (a) He's dead but he won't lie down, from Looking on the bright Side, (b) The Flies

crawled up the Window, from Jack's the Boy, (c) To-day I feel so happy, from Sunshine Susie; Selection from The Crooner. **11.30,** Organ and Violin Recital. Organ Solos: (a) Selection of Waltzes (arr. Stoddon), (b) Chanson (Friml), (c) Schön Rosmarin (Kreisler); Violin and Organ: Because (d'Hardelot); Love's Garden of Roses (Haydn Wood); Violin and Organ: A Perfect Day (Jacobs-Bond); A Brown Bird singing (Haydn Wood). **12 Midnight,** Variety Programme. Accordion Solo: Medley of Irish Jigs (arr. Hannah); The Jolly Sailor (Carter); Yodelling Mad; Accordion Solo: Ragtime Melody (arr. Charles); The Lost Mountaineer; Here comes Annie Lee; Accordion Solos: (a) More Ragtime Memories (arr. Charles), (b) Medley of Scottish Reels (arr. Hannah). **12.30 a.m. (Friday),** Vocal and Orchestral Concert. Good Old-Time Songs (arr. Peccorini); Songs: (a) I am the Words (de Sylva), (b) Little Things in Life (Berlin), (c) Just once for all Time (Leigh), (d) Little white Lies (Donaldson), (e) Reaching for the Moon (Berlin), (f) Live, love and laugh (Heymann); Orchestra: Old Time Songs (arr. Peccorini). **1.0,** Violin Recital. Quartet: Union Reel (Traditional); Solos: (a) Tell her I am, (b) Boys at the Lough, (c) Tom Clarke's Reel, (d) March of the Cameron Men, (e) The Morning Dew, (f) Donegal Hornpipe, (g) Cliff Hornpipe, (h) John Anderson; Quartet: Unlucky Blues (Lewis). **1.30,** Vocal and Orchestral Concert. Ashore; Oft in the stilly Night; Drink to me only with thine Eyes; Orchestra: When the Lilac blooms again (Rotter); The Rosary (Nevin); Tom Bowling; Once again; Orchestra: Vienna, Vienna (Foss). **2.0,** Dance Music. **2.57,** I.B.C. Good-night melody. **3.0,** Close Down.

FLENSBURG.—See **Hamburg.**

FLORENCE.—See **Turin.**

FRANKFURT

259 metres; 17 kW; and **CASSEL, 245.9 metres.—6.15 p.m.,** Time, Programme Announcements, Weather and Exchange. **6.20,** Dialogue on Motor Roads. **6.30,** Symphony in C (Wagner), by the Station Orchestra, conducted by Hans Rosbaud. **7.15,** Down the Moselle—a Radio Sequence (Irsch). **8.0,** Variety Music by the Station Orchestra, with Hedi Kettner (Soprano) and Others. **9.10,** Time, News, Weather and Sports Notes. **9.30,** See **Stuttgart. 11.5** (approx.), Close Down.

FREDRIKSSTAD.—See **Oslo.**

FREIBURG.—See **Stuttgart.**

GENEVA.—See **Radio-Suisse Romande.**

GENOA.—See **Turin.**

GLEIWITZ.—See **Breslau.**

GOTEBORG.—See **Stockholm.**

GRAZ.—See **Vienna.**

HAMAR.—See **Oslo.**

HAMBURG

Call ha (in Morse), **372 metres;** 1.5 kW.. Relayed by **Bremen, 269.8 metres; Flensburg, 227.4 metres; Hanover, 566 metres;** and **Kiel, 232.2 metres.—4.55 p.m.,** Concert of Chamber Music by Erna Kroll-Lange (Soprano), Gertrud Schnitzer (Soprano), Bernhard Jakschtat (Bass-Baritone), Hans Rosenlöcher (Violin), Heinrich Ritter ('Cello), Gerhard Maass (Viola and Pianoforte), and Gerhard Gregor (Pianoforte and Lute). Prelude in C from Das wohltemperierte klairer (Bach); Trio for Two Sopranos and Bass, Glaubt ihr, Bestädigkeit (Mozart); Letter Duet from Figaro (Mozart); Allegretto and Andante from the Sieben Bagatellen, Op. 33, Nos. 3 and 4 (Beethoven); Two Songs for Bass-Baritone from Die schöne Müllerin (Schubert): (a) Wohin?, (b) Der Neugierige; German Dances, Op. 33 (Schubert); Andante for Pianoforte, Violin, and 'Cello, from the Trio, Op. 101 (Brahms); Two Venetian Gondola Songs from Songs without Words, Op. 19, No. 6 and Op. 30, No. 12 (Mendelssohn); Märchenbilder, Op. 113, No. 3, for Violin and Pianoforte (Schumann); Children's Songs and Songs to the Lute (Knab); Two Pieces for Pianoforte from Jugendzeit, Op. 17 (Max Reger); Movement from the Sonata for Viola and Pianoforte, Op. 11, No. 4 (Hindemith). **5.55,** Exchange. **6.0,** Health Talk. **6.25,** Weather. **6.30,** Song Recital by Wilhelm Rabot: Two Songs (Robert Franz): (a) Auf dem Meere, (b) Denk ich dein; Es muss ein Wunderbares sein (Liszt); Ueber allen Gipfeln (Liszt); Two Songs (Trunk): (a) Vor Akkon, (b) Landsknechtslied; Two Songs (Frizt Jürgens): (a) Das treue Paar, (b) Elisabeth. Two Songs (Schmalstieh): (a) Dämmerung, (b) Tinkspruch. **7.0,** A Visit to Mark Twain in Heaven—Radio Sequence (Rudolf Arnheim). **8.0,** Orchestral and Choral Concert, conducted by Adolf Secker. The Adolphina Male Voice Choir and the Station Chamber Orchestra. Soloists: Wilma Deyke (Soprano) and Hans Rosenlöcher (Violin). Overture, Jessonda (Spohr); Sanctus, from the German Mass A—Capella (Schubert); Die Allmacht, for Soprano, Choir, and Pianoforte (Schubert, arr. Liszt); Rondo in A for Violin and Strings (Schubert); Moment musical (Schubert); Der Gondelfahrer (Schubert); Military March No. 1, Das Dörfchen (Schubert); Der Lindenbaum (Schubert); German Dances (Beethoven); Overture, Ruy Blas (Mendelssohn). **9.10,** Time, Weather, News, Sports Notes, and Police Report. **9.30,** Topical Talk. **9.40,** Concert of Dances by the Station Chamber Orchestra, conducted by Gerhard Maass. In an interval at **10.20,** Ice Report. **10.25,** Concert by the Gesterkamp Quartet: Variations on Death and the Maiden, from the Quartet in D Minor (Schubert); Andante and Moderato from the Quartet in A Minor (Brahms); Canzonetta (Mendelssohn).

HANOVER.—See **Hamburg.**

HEILSBERG

276.5 metres; 60 kW.; and **DANZIG, 453.2 metres.—12.5 to 1.30 p.m.,** Gramophone Concert: Selection from Rusalka (Dvorák); Pianoforte Solo, Etude and Mazurka in C (Chopin); Violin Solo, Zigeunerweisen (Sarasate); Tenor Solos, (a) Strandlegende (Ehrke), (b) Blumenlied (Meyer-Helmund); Destiny (Baynes); Dream Waltz (Joyce); Selection from Gasparone (Millöcker); Polka, Feierfest (Joh. Strauss); Gallop, Bahn frei (E. Strauss); Im Köpfle zwei Aeugle (Millöcker); Kaiserwalzer (Joh. Strauss); Prince Eugen March (Joh. Strauss); Grossherzog-Friedrich-Marsch (Böttge). In the interval at **12.20,** News. **2.0,** Exchange Rates and Market Prices. **3.0,** Programme for Young People. **3.30,** Concert by the Little Orag Orchestra, conducted by Eugen Wilcken: Overture, Yelva (Reissiger); Aria (Tenagliaries); Selection from Lohengrin (Wagner); Waltz, Transaktionen (Jos. Strauss); Rhapsody No. 13 (Liszt); Overture, Undine (Lortzing). **4.50,** Review of Periodicals. **5.15,** Market Prices. **5.20,** Ice Report. **5.30,** Agricultural Talk: Plant Diseases. **5.55,** Talk on Biology. **6.30,** Elementary English Lesson. **6.55,** Weather and News. **7.5** (from **Danzig**), Problems of Contemporary Literature—School and Life. **8.5,** Choral Concert of Wagner Music: The Choir and Orchestra of the Königsberg Opera House, conducted by Ludwig Leschetizky: Prelude to the Second Act and Chorus from Rienzi; Sailors' Chorus; Prelude to the Second Act and Spinning Girls' Chorus from The Flying Dutchman; Bacchanal, Prelude to the Third Act, Pilgrims' Chorus, and Finale from Tannhäuser; Chorus and Hymn from Parsifal. **9.30,** Weather, News, and Sports Notes.

HILVERSUM

Announced **HUIZEN, 296.1 metres;** 20 kW. (7 kW. up to **4.40 p.m.).—11.55 to 1.40 p.m.,** Programme of the Catholic Radio Society (K.R.O.). **11.55 a.m.,** Concert by the K.R.O. Orchestra, conducted by J. Gerritsen: Egyptian March (Joh. Strauss); Overture, The Bohemian Girl (Balfe); Donausagen (Fucik); Selection from Lakmé (Delibes); Le plus joli rêve (Arezzo); Selection from The Bayadere (Kálmán); Gramophone Records: Sornettes (de Taye); Selection from The Magic Flute (Mozart); Selection from Mignon (Thomas); Offenbachiana (Conradi); Die schönen von Valencia (Morena); Brüder vom Rhein (Blankenburg). **1.40** till Close Down. Programme of the Christian Radio Society (N.C.R.V.). **1.40,** Lesson in Handicrafts. **2.40,** Programme for Women. **3.10 to 3.40,** Interval. **3.40,** Bible Reading, Organ Solos and Songs. **4.40,** Song Recital by Mme. Henriette van der Kamp (Contralto). **5.25,** Handwork for Young People. **5.55,** Talk. **6.25,** Dressmaking Lesson. **6.40,** Press Review. **7.10,** Police Notes. **7.25,** Religious Report. **7.40,** Organ Recital by Jan Zwart. **8.40,** Talk. **9.10,** Oboe, 'Cello and Pianoforte Recital by Jaap Stotijn (Oboe), J. Blazer ('Cello), and C. Severeus (Pianoforte): Trio Sonata (Loeillet); Sonata (de Fesch); Rhapsody (Peterkin); March of the Highlanders (Godard); Suite (Blazer); Trio (Poulenc). **10.10,** News Bulletin. **10.20,** Variety Music on Gramophone Records. **11.10** (approx.), Close Down.

HORBY.—See **Stockholm.**

HUIZEN

Announced **HILVERSUM, 1,875 metres;** 8.5 kW.—**11.41 a.m.** till Close Down, Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.). **11.41,** Concert by the Wireless Orchestra, conducted by Nico Treep. **1.40 p.m.,** Talk. **2.25,** Variety Music on Gramophone Records. **2.40,** Talk. **3.25,** Popular Music on Gramophone Records. **3.40,** Talk and Musical Programme. **4.10,** Concert of Light Music by Kovacs Lajos and his Orchestra. Soloist: Bob Scholte (Song). **4.40,** Programme for Children. **5.10,** Concert of Light Music (contd.). **6.10,** Talk on Sports. **6.40,** Concert of Light Music (contd.). **7.10,** English Lesson. **7.40,** Time Signal. **7.41,** News Bulletin. **7.45,** Popular Music on Gramophone Records. **7.55,** Concert by the Little Concertgebouw Orchestra, relayed from the Concertgebouw, Amsterdam. Conductor: Pierre Monteux. Soloists: Wanda Landowska (Harpsichord) and Leeuwen-Boomkamp (Viola da Famba): Concerto for Harpsichord (Handel); Concerto for Viola da Gamba (Tartini). **8.55,** Light Music on Gramophone Records. **9.10,** Concert by the Wireless Orchestra, conducted by Nico Treep. Soloist: Adelheid Armhold (Songs): Overture, Czar and Carpenter (Lortzing); Aria from Der Freischütz (Weber); Aria from Euryanthe (Weber); Concert Waltz (Glazunov); Wiegenlied (R. Strauss); Ständchen (R. Strauss); Selection from Lohengrin (Wagner); Waltz, Farla (Arditi); Selection from The Land of Smiles (Lahár); San Lorenzo (Silva). **10.40,** News. **10.50,** Popular Music on Gramophone Records. **11.40** (approx.), Close Down.

INNSBRUCK.—See **Vienna.**

KALUNDBORG.—See **Copenhagen.**

KAUNAS

1,935 metres; 7 kW.—**5.10 p.m.,** Talk: Handwork in Schools. **5.30,** Variety Programme. **6.0,** Time, Weather, and News. **6.30,** Concert of Light Music. **7.10,** Talk on Copper. **7.30,** Concert. **8.0,** Talk in Esperanto: Lithuanian Literature. **8.20,** Concert. **9.30** (approx.), Close Down.

KIEL.—See **Hamburg.**

KLAGENFURT.—See **Vienna.**

KOSICE.—See **Prague.**

LAHTI

1,796 metres, 40 kW.; and **HELSINKI, 368.1 metres.—6.0 p.m.,** Quartet for Strings (Melartin), relayed from the Conservatoire, Helsinki. **6.40,** Märttä Leijonhufvud—Play (Martti Vuori). **7.15,** Popular Music on Gramophone Records. **7.45,** News in Finnish and Swedish, and Close Down.

LANGENBERG

473 metres; 60 kW.—**12 Noon,** Concert, conducted by Eysoldt. Comedy Overture (Thomas); Selection from Manon Lescant (Puccini); Barcarolle, Mondnacht in Venedig (Brasse); Serenade from Les Millions d'Arlequin (Drigo); Miniature Suite (E. Coates); Waltz, Auf Flügeln der Nacht (Faust); A.B.C. Potpourri (Komzak); Italian Serenade (Micheli); March, Der deutsche Ozeanflieger (Becher). In the interval at **1.0 p.m.,** News. **1.30,** Sponsored Programme with Gramophone Records. **2.30,** Economic Notes and Time. **2.50,** Programme for Children. **3.20,** Notes on the Broadcasts for Schools. **3.30,** Educational Talk. **4.0,** See **Frankfurt. 5.0,** Talk: The History of the German Language. **5.20,** Talk: Human and Animal Intelligence. **5.45,** Weather, Time, Economic Notes, and Sports Results. **6.0,** Talk for Workers. **6.20,** Talk on the Feminist Movement. **6.30,** Talk: Social Work among the Miners in the Ruhr District. **6.55,** News. **7.0,** Masters of their Craft—Gramophone Concert. **7.35,** Des Knaben Wunderhorn—Concert by the Station Chamber Choir, conducted by Zimmermann, with Commentary by Paul Gehly. **8.0,** Confetti—A Carnival Radio Fantasy (Ernst Drawe), with Music by Peter Holberg. **9.10,** News and Sports Notes. **9.30,** Serenade, conducted by Wolf. **10.45,** See **Stuttgart. 11.10** (approx.), Close Down.

LAUSANNE.—See **Radio-Suisse Romande.**

LEIPZIG

389.6 metres; 120 kW.; and **DRESDEN, 319 metres.—12.15 p.m.,** Stolz Concert-on Gramophone Records: Du sollst der Kaiser meiener Seele sein; In Wien wo der Wein und der Walzer blüht; Von Rüdesheim bis Heidelberg; Mir sagt dein Blumenstrauss; Im Prater blüh'n wieder die Bäume; Wien wird bei Nacht erst schön; Mein Liebeslied muss ein Walzer sein; Leutnant warst du einst bei den Husaren; Grüss' mir mein Heimatland; Wenn die kleinen Veichen blühn; Du, du, du schliess' deine Augen zu; Frag nicht, warum ich gehe; Ich wünsche mir ein Töchterlein; followed by Exchange Quotations. **1.0,** Film Report. **1.30,** A Discussion between a Mayor and an Unemployed Man: Suburban Settlements. **2.35,** Economic Notes. **3.0,** Orchestral Concert, conducted by Ernst Herrmann: Comedy Overture, Op. 74 (Kéler-Béla); Selection from The Czarevitch (Lehar); Boston-Intermezzo (Nick); Folk Song (Kunla); Scherzo, Irrlichter und Kobolde (Hofmann); Masquerade from The Merchant of Venice (Sullivan); March (Itzel); Sturmgalopp (Komzak). **4.30,** Weather and Time. **4.35 to 4.50,** Interval. **4.50,** Economic Notes. **5.0,** Dramatic Programme. **5.30,** Spanish Lesson. **5.50,** Talk on Taxation. **6.0,** Violin Sonata in A (C. Franck) by Gustav Fritzsche (Violin) and Theodor Blumer (Pianoforte). **6.30,** A Discussion on Sickness Benefit. **7.0,** Semele—Oratorio in Three Acts (Händel) for the Centenary of the Foundation of the Robert Franz Musical Academy in Halle. **9.15,** News and Close Down.

LINZ.—See **Vienna.**

MADRID

ARANJUEZ, EAQ, 30.43 metres; 20 kW.—**10.30 p.m.,** Variety Music. **10.45,** Radio Chronicle. **11.0,** Variety Music (contd.). **11.35,** Talk. **11.40,** Light Music. **12 Midnight** (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 424.3 metres; 2 kW.—**7.0 p.m.,** Chimes, Exchange, Programme for Children and Request Gramophone Records. **8.15,** News Bulletin. **8.30 to 9.0,** Interval. **9.0,** English Lesson by the Linguaphone Method. **9.30,** Chimes, Time, Political Review and Confessions before the Microphone by M. Sanchez de Palacois, with an Interlude by Eloisa Muro, Maria Bru and Isbert; followed by Concert, conducted by Martin Domingo, relayed from the Hotel Nacional. **11.45,** News. **12 Midnight,** Chimes and Close Down.

MALMO.—See **Stockholm.**

MILAN.—See **Turin.**

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—**3.10 p.m.,** See **Brno. 4.10,** See **Prague. 4.20,** See **Brno. 5.0,** Talk on Art. **5.15,** See **Prague. 5.30,** German Transmission: Relay from the Municipal Museum. **6.0,** till Close Down, See **Prague 10.0** (approx.), Close Down.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—**4.0 p.m.,** News. **4.10,** Announcements. **4.30,** Literary Programme. **5.30,** Concert from the Grand Theatre. **8.0,** Talk in French: The Red Army. **8.55,** Time. **9.5,** Press Review.

MOTALA.—See **Stockholm.**

MUHLACKER.—See **Stuttgart.**

MUNICH

533 metres; 60 kW. Relayed by **Augsburg** and **Kaiserslautern, 560 metres;** and **Nürnberg, 239 metres.—4.0 p.m.,** Concert from **Stuttgart. 5.15,** A Report on Wireless Technical Problems. **5.35,** Agricultural Talk. **5.55,** Time, Weather and Market Prices. **6.5,** Talk: The Carloviugian Empire.—II. **6.30,** Die Pfingstorgel—A Bavarian Play (Alois Johannes Lippl), with Music. **8.0,** Dance Music on Gramophone Records. **8.40,** Die Phrasenkantate—for Speaking Choir (Peter Paul Althaus). **9.20,** Time, Weather, News and Sports Notes.

NAPLES.—See **Rome.**

NOTODDEN.—See **Oslo.**

OSLO

1,083 metres; 60 kW. Relayed by **Fredrikstad, 365.8 metres; Hamar, 574.7 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres,** and **Rjukan, 447.1 metres.—4.0 p.m.,** Concert by the Willy Johansen Orchestra, relayed from the Continental Hotel: Selection from The Pearl Fishers (Bizet); Waltz, Vive la danse (Waldteufel); Intermezzo and Barcarolle from The Tales of Hoffmann (Offenbach); Humoresque (Demaret); Hymn to the Sun (Rimsky-Korsakov); Serenata capricciosa (Rangate); Suite from Le Cid (Massenet). **5.0,** German Lesson. **5.30,** Studio Service. **6.0,** Announcements and News. **6.30,** Fianoforte Recital of Chopin Music by Rolf Brandt Rantzau. **7.0,** Time. **7.1,** Programme in memory of the First Transmission Ten Years ago on the Mountain of Tryvandshöide, the First Norwegian Studio Musical Programme and Talks. **7.30,** Technical Talk. **7.45,** Recitations. **8.10,** Soprano and 'Cello Recital by Nancy Hille and Hans Balchen. **8.40,** Weather and News. **9.0,** Topical Talk. **9.15,** Concert by the Station Orchestra, conducted by Hugo Kramm. Soloist: Theodor Andresen (Tenor); Homage-March (Grieg); Scherzo from the Symphony in D (Svendsen); Norwegian Songs; Norwegian Rhapsody No. 1 (Halvorsen). **10.15** (approx.), Close Down.

OSTERSUND.—See **Stockholm.**

PALERMO

542 metres; 3 kW.—**7.0 p.m.,** Dopolavoro Notes, Agricultural Report, and Giornale Radio. **7.20,** Popular Music on Gramophone Records. **7.30** (in an interval), Time Signal and Announcements. **7.45,** Concert of Variety Music. **9.0,** I nudisti i calanugna—Dialect Comedy in One Act (Girgenti). **9.30,** Concert of Variety Music (contd.). **9.55** News Bulletin.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW.—Time Signals (on **2,650 metres**) at **9.26 a.m.** and **10.26 p.m.** (Preliminary and 6-dot Signals).—**5.45 p.m.,** Le Journal Parlé. **7.20,** Weather Report. **7.30,** Gramophone Concert: Overture, The Flying Dutchman (Wagner); Selection from Lohengrin (Wagner); Selection from Fra Diavolo (Auber); Wedding March of a Doll (Lecocq); Bells across the Meadow (Ketelbey); A Tea Garden in Ceylon (Yoshitomo); On the Garden Wall (Montenx); Piece (Gabriello); Variations for Two Cornets (Strobl); Le P'tit Quinquin (Desrousseau); Fête au Harem (Frichystal); Festival of the Gnomes and Wedding Waltz (Lincke). **9.0** (approx.), Close Down.

FEB. 23rd **THURSDAY** *continued*

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—6.45 p.m., Journal Parlé. **7.0,** Programme for Children. **7.30,** Light Music on Gramophone Records. **8.0,** Agricultural Notes. **8.5,** Talk by the Vicomte Henry de France. **8.15,** Interval. **8.30,** Les Vignes du Seigneur—Play (de Flers and Caillavet). **10.30,** News.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. **7.30,** Weather and Physical Culture (contd.). **7.45,** Probable Relay of the Test Match from Australia. **8.0,** Press Review and Weather. **8.30,** Test Match Relay (contd.). **8.45 to 12.30,** Interval. **12.30,** Orchestral Concert: Selection from Luln (Parès and van Parys); Two Airs (Heymann) on Gramophone Records; Two Airs from Violettes Impériales (Collet) on Gramophone Records; Selection from Arthur (Christiné); Melody (Freed and Brown) on Gramophone Records; Air from The Gay Adventure (Erwin) on Gramophone Records; Two Scenes from La Vie de Paris (Casadesus); Pages d'album (Nerini); Ballet des Parfums (Popy). In the intervals at **1.0 p.m.,** Exchange, News, and Weather, and at **1.30,** Exchange. **2.0,** Exchange. **3.45,** Exchange and Market Prices. **6.10,** Agricultural Talk. **6.30,** Light Music on Gramophone Records. **6.45,** Legal Talk. **7.0,** A Dialogue between Frédéric Lefevre and André Maurois on History and Humanitarianism. **7.20,** Orchestral Concert: Maroussia (Luigini); Faust Suite, No. 2 (Lazzari); Slav Dance (Dvorák). **7.45,** Review of the Central European Press. **8.0,** La Nouvelle Idole—Play (François de Curel). In the interval at **8.30,** Weather, News, and Sports Notes, and at **8.40,** Review by Christophe. **9.30,** Gramophone Concert: Overture, Euryanthe (Weber); Two Airs from Der Freischutz (Weber); Selection, the Force of Destiny (Verdi); Four Extracts from Louise (Charpentier); Three Songs from Mephistopheles (Boito); Air from Resurrection (Alfano); The Ride of the Valkyries from The Valkyries (Wagner).

PITTSBURGH

WESTINGHOUSE ELECTRIC, KDKA, 306 metres; 25 kW. Relayed by **W8XK** on **48.86 metres** and **25.27 metres.—9.0 p.m.,** Work-a-day Thoughts. **9.5,** Business News. **9.15,** Programme to be Announced. **9.30,** Weather Report. **9.32,** Market Reports. **9.45,** Pianoforte Interlude. **9.50,** David Lawrence Dispatch. **9.55,** KDKA Artist Bulletin. **9.58,** Programme Announcements. **10.0,** Programme to be Announced. **10.15 to 11.15, New York** Relay. **10.15,** The Adventures of Dr. Doolittle. **10.30,** Singing Lady. **10.45,** Little Orphan Annie. **11.0,** Our Daily Food, by George Rector's Cooking School. **11.15,** Time Signal. **11.16,** Weather Report. **11.17,** Teaberry Sport Review. **11.22,** Press News Reeler. **11.27,** Strange Facts. **11.29,** Temperature Report. **11.30,** KDKA Orchestra. **11.45 to 12.30 a.m. (Friday), New York** Relay. **11.45,** To-day's News by Lowell Thomas. **12 Midnight,** Pepsodent Amos 'n' Andy. **12.15 a.m.,** Carson Robison and his Barbasol Buckaroos. **12.30,** Programme to be Announced. **12.45 to 3.15, New York** Relay. **12.45,** Westinghouse Programme. **1.0,** Cape Diamond Lights. **1.30,** Time Signal and Rin-Tin-Tin Thrillers. **1.45,** Thurston the Magician. **2.0,** Death Valley Days. **2.30,** Len Joy's Dancing Strings. **3.0,** Wilfred Glenn (Bass). **3.15,** The 1933 Income Tax by Robert L. Wickline. **3.30,** Homay Bailey and Orchestra, from **New York. 3.45,** Bradley Kincaid, from **New York. 4.1,** Teaberry Sport Review. **4.11,** Temperature Report. **4.12,** Weather Report. **4.13,** KDKA Artist Bulletin. **4.15,** Press Last Minute News Flashes. **4.20,** Heart Songs by Louise Frayne. **4.30,** Henry Halstead and his Californians. **5.0,** Hotel McAlpin Orchestra, from **New York. 5.30,** Time Signal and Good-night.

PORSGRUND.—See **Oslo.**

PRAGUE

488.6 metres; 120 kW.—**3.10 p.m.,** See **Brno. 4.10,** Talk on Economics. **4.20,** See **Brno. 4.50,** Variety Music on Gramophone Records. **5.5,** Talk for Bee-Keepers. **5.15,** Talk for Workers. **5.25,** News in German. **5.30,** German Transmission: Two Talks on Agriculture. **6.0,** Chimes from the Church of St. Loudmila, Královské Vinohrady. **6.0,** News. **6.10,** Elementary English Lesson. **6.25,** Talk on Czech History. **6.40,** Concert by the Station Orchestra, conducted by Otakar Jeremias. Soloist: Stanislava Korwin-Szymanowska (Songs): Overture, Halka (Moniszko); Song, Plydilé (Dupare); Two Japanese Songs (Maklakiewicz); Two Songs (Szymanowski); Aria from The Prodigal Son (Debussy); Gopak (Mussorgsky). **7.25,** Different Forms of Orchestral Music—Concert with Introductory Talk. **8.0,** Running Commentary on the International Ice Hockey Championship, relayed from the Winter Stadium. **8.30,** Concert in Honour of the Esthonian National Festival. **9.0,** Time Signal. **9.1,** News Bulletin. **9.15,** Running Commentary on the International Ice Hockey Match, relayed from the Winter Stadium. **10.0** (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW; **LAUSANNE, 680 metres;** and **GENEVA, 760 metres.—5.35 p.m.** (from **Lausanne**), Italian Lesson. **6.0** (from **Lausanne**), Weather and News. **6.15** (from **Lausanne**), Answers to Correspondence. **6.30** (from **Lausanne**), Theatre Review. **7.0** (from **Geneva**), Dramatic Programme by Artists of the Théâtre de la Comédie. **7.30** (from **Geneva**), Cabaret Programme. **8.30** (from **Geneva**), Talk: The Work of the League of Nations. **9.0,** News and Weather Forecast. **9.15** (approx.), Close Down.

RIGA

525 metres; 15 kW.—**2.30 p.m.,** Concert of Puccini Opera Music; Airs from Tosca; Trio from Turandot; Melodies from Madame Butterfly. **3.30,** Talk on Hygiene. **4.0,** Mandoline Concert: Valse Mélancolique (Darzins); Solveig's Song (Grieg); Stephanie Gavotte (Czibulka); Waltz, The Blue Danube (Joh. Strauss); At Eventide (Sinding); Andante cantabile (Tschaikovsky); Ukranian Melody (Prisovsky); Overture, Poet and Peasant (Suppé). **5.0,** Radio Review. **5.30,** English Lesson. **6.0,** Weather Report. **6.5,** Concert by the Radio Orchestra, conducted by Leonids Vigners. Part I: Tchaikovsky Music: Overture, Romeo and Juliet; Selection from Iolanthe; Ballet Music from The Sleeping Beauty. **7.0,** News Bulletin. **7.20,** Wagner Song Recital by Adols Kaktins (Baritone); Aria from The Flying Dutchman (Wagner); Two Airs from Lohengrin. **7.40,** Concert, Part II: Petite Suite (Debussy); Algerian Suite (Saint-Saëns). **8.0** (in an interval), Weather and News. **8.30,** Dance Music. **9.30** (approx.), Close Down.

RJUKAN.—See **Oslo.**

ROME

Call 1RO, 441 metres; 50 kW. Relayed by **Naples, 310 metres,** and **2RO, 25.4 metres.—7.0 a.m.,** Gymnastics. **7.15,** Giornale Radio and Announcements. **11.30,** Weather, and Light Music on Gramophone Records. **12 Noon,** Time and Announcements. **12.2 to 1.15 p.m.,** Orchestral Concert. In the interval at **12.30,** Giornale Radio and Exchange. **3.35,** Children's Radio Review. **4.10,** Announcements. **4.15,** Giornale Radio. **4.30 to 5.15,** Orchestral Concert: Overture, Don Giovanni (Mozart); Parlami d'amore, Mariù (Bixio); Selection from I Pagliacci (Leoncavallo); Pianoforte Solo, Valse arabesque (Jak); Tango, Primavera (Carducci); Pianoforte Solo, Le Campane di Montoro (Serrao); Pianoforte Solo, Quel che dice la fonte (Napoli); March, Vocazione (Marbot). **6.10 (Naples),** Shipping and Sports Notes. **6.15,** Agricultural Report and Announcements. **6.20,** Giornale Radio. **7.0,** Time and Announcements. **7.15,** Light Music on Gramophone Records. **7.20,** Talk for the Housewife. **7.30,** Sports Notes, Tourist Report, and Announcements. **7.45,** Symphony Concert, conducted by Igor Stravinsky. In an interval, Talk on Literature and Art. **9.55,** News Bulletin. After the Concert, Dance Music. **11.0** (approx.), Close Down.

SALZBURG.—See **Vienna.**

SCHENECTADY

GENERAL ELECTRIC COMPANY, WGY, 379.5 metres; 50 kW. Relayed at intervals by **W2XAF** on **31.48 metres** and by **W2XAD** on **19.56 metres.—12 Midnight,** Russian Symphony Choir, from **New York. 12.15 a.m. (Friday),** Stock Reports. **12.30 to 3.0, New York** Relay. **12.30,** The Regimentalists—Male Choir. **12.45,** The Goldbergs. **1.0,** Fleischmann Hour—Rudy Vallee and his Orchestra. **2.0,** Captain Henry's Show Boat. **3.0,** Lucky Strike Hour, from **New York,** followed by Programme Resumé.

SCHWEIZERISCHER LANDESSENDER

BEROMUNSTER, 459 metres; 60 kW.; **BASLE, 244.1 metres;** and **BERNE, 245.9 metres.—11.28 a.m.,** Time Signal from Neuchâtel Observatory. **11.30,** Weather and News. **11.40,** Operetta and Sound Film Music, on Gramophone Records. **12.35 p.m.,** Weather and Exchange. **12.45 to 2.30,** Interval. **2.30** (from **Berne**), Talk for Housewives. **3.0,** Concert of Swiss, Bavarian, and Austrian Folk Music. **4.0,** Dance Music. **4.30,** Weather. **4.35 to 5.30,** Interval. **5.30** (from **Basle**), Hans Giffgen reads from his own Works. **6.0,** Time, Weather and Traffic Report. **6.15** (from **Basle**), Elementary Italian Lesson. **7.0** (from **Basle**), Schubert Concert: Music for Flute, Guitar, Viola and 'Cello. Songs with Guitar Accompaniment. **7.45** (from **Zürich**), Act II of Tristan und Isolde—Opera (Wagner), relayed from the Municipal Theatre. In an interval at **8.50** (approx.), Weather and News. **9.50** (approx.), Close Down.

SOTTENS.—See **Radio-Suisse Romande.**

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by **Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,348 metres; Ostersund, 770 metres;** and **Sundsvall, 542 metres.—4.5 p.m.,** Studio Service, relayed from **Hudiksvall, 225 metres. 4.30,** Programme for Children. **4.45,** Popular Music on Gramophone Records. **5.45,** Elementary English Lesson, relayed from **Jönköping, 201.3 metres. 6.15,** Weather and News. **6.30,** Military Band Concert of Music from Many Lands. Germany: Melodies (Teike): (a) Alte Kameraden, (b) Koburger-Marsch. Scotland: Melody (Coldstream Guards); Highland Laddie (Scots Guards); Dumbarton Drums (Royal Scots); The Campbells are coming (Argyll and Sutherlands). France: (a) Le défile de la Garde Républicaine (Wettge), (b) Le Régiment de Sambre et Meuse (Planquette). Belgium: (a) March of the First Regiment of Grenadiers (Bender), (b) Prince Léopold (Bury). Russia: March (Budjennij). America: (a) Semper Fidelis (Sousa), (b) The Stars and Stripes for Ever (Sousa). Sweden: Regimental March (Ericson). **7.30,** Talk on Traffic Problems. **8.0,** String Quintet in C, Op. 163 (Schubert). **8.45,** Weather and News. **9.0,** Concert, relayed from the Gustav Vasa Church. Soloist: Otto Olsson (Organ): Concerto No. 1 in G Minor, for Organ and Orchestra (Handel); Air from the Suite in D (Bach); Two Sonatas for Organ and Orchestra (Mozart); Allegretto from the Symphony in D Minor (Franck); Overture, St. Paul (Mendelssohn). **10.0** (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—**11.30 a.m.,** Gramophone Concert of Popular Music. **12.45 p.m.,** News. **1.0,** Time and Exchange. **1.5,** Tchaikovsky Concert on Gramophone Records. **2.0,** Programme for Children. **3.0 to 4.15,** Interval. **4.15,** French Elocution Lesson. **4.30,** Programme for Children, relayed from **Bordeaux-Lafayette. 6.0,** Talk in French: Beautiful French Gardens of the Past. **6.15,** Talk for Women: Women and Civil Law. **6.30,** Orchestral Concert, conducted by Roskam. Soloist: M. Grégoire (Violin). March, Apollo (Lincke); Waltz, Eternelle Ivresse (Ganne); Violin Solo: Italian Serenade (Calndi); Overture, Pique Dame (Suppé); Barcarolle (Tchaikovsky); Selection from Tosca (Puccini); Valse poudrée (Popy); Selection from Là-Haut (Yvain). **7.30,** Time and News. **7.45,** Gramophone Concert: Babillage (Gillet); Valse triste (Vecsey); Serenade to Kubelik; Souvenir (Drdla); Lortzing Potpourri (Meyrowitz); Elegy (Massenet); Selection from The Bird Fancier (Zeller). **8.25,** Lottery Results. **8.30,** Wagner Concert, conducted by Maurice de Villers. Soloists: Louise Mancini and Jean Hazart (Songs). Overture and Airs from The Flying Dutchman; Prelude to Parsifal; Good Friday Music from Parsifal; The Ride of the Valkyries. **10.30** (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW., and **FREIBURG, 570 metres.— 12.15 p.m.,** Time, News, Weather and Programme Announcements. **12.30,** Concert from **Langenberg. 1.0,** Sponsored Concert. **1.30,** Spanish Lesson. **2.0,** Radio Report on the German International Ski-ing Championship on the Feldberg. **2.30,** Programme for Children. **3.35,** Talk: The Alsatian Dialect. **4.0** (from **Freiburg**), Old and New Serenades—Concert by the Freiburg Concert Orchestra, conducted by R. Fried. Soloists: Hans Zetter ('Cello) and Hans Prandhoff (Baritone); Serenade (Haydn); Serenade from Don Giovanni (Mozart); Ständchen (Schubert); Serenade for 'Cello and Orchestra (Volkmann); Serenade from The Damnation of Faust (Berlioz); Nächtliche Serenade (Köhler); Amerikanische Serenade (Zöllner). **5.15,** Time, Weather and Agricultural Notes. **5.25,** Talk by Captain Botsch: The Officer. **5.50,** Talk: German Philosophy. **6.15,** Time and News. **6.20** (approx.) (from **Mannheim**), South-West German Market Report. **6.30,** See **Frankfurt. 9.10,** Time, News, Weather and Programme Announcements. **9.30,** Dance Music by the Stuttgart Philharmonic Dance Band, conducted by Harry Risch. Soloist: Gretl Winkler. **10.45,** Report on the Six Days' Racing, relayed from the Town Hall. **11.5** (approx.), Close Down.

SUNDSVALL.—See **Stockholm.**

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—**5.45** p.m., Petite Suite (Debussy) by the Symphony Orchestra. **6.0,** News Bulletin. **6.15,** Tango Songs. **6.30,** Programme for Children. **7.0,** Popular Melodies. **7.15,** News, Market Prices and Racing Results. **7.30,** Operetta Music: Overture, Véronique (Messager); Waltz from Gipsy Love (Lehár); Waltz from A Waltz Dream (O. Straus). **7.45,** Opera Music: Aria from Mignon (Thomas); Siciliana from Cavalleria rusticana (Mascagni); Aria from Manon (Massenet). **8.0,** Military Music. **8.15,** Extracts from Sound Films. **8.30,** Extracts from Les Cloches de Corneville—Operetta (Planquette). **9.0,** Symphony Concert: Retreat and Prayer (Kreutzer); Pacific (Honegger); Selection from Cydalise et le Chèvre-pied (Pierné); Hungarian March Berlioz); La Czarine (Ganne); Le dernier sommeil de la Vierge (Massenet). **9.30,** Accordion Music. **9.45,** Concert by a Viennese Orchestra. **10.15,** North African News. **10.30,** Concert for Listeners in Morocco: Overture, Barbe bleue (Offenbach); Waltz from Mirella (Gounod); Violin Solo: Hungarian Poem (Hubay); Donauwellen (Ivanovici); Habañera (Sarasate). **11.0,** Programme in English by the I.B.C. **11.0,** Concert of Light Music, Orchestra: Waltz, Tales from the Vienna Woods (Joh. Strauss); Song, Mother Machree (Young); The Soldiers' Chorus from Faust (Gounod); Orchestra: Hungarian Dances (Brahms); The Anvil Chorus from Il Trovatore (Verdi); Song, Danny Boy (Weatherley); Orchestra: Selection from Waltzes from Vienna (Joh. Strauss). **1.30,** The I.B.C. Half Hour. Always in my Heart; Wanderer; Here's hoping; Dreaming; Blue Moon in the Sky; Mimi; Roll on Kentucky Moon; Isn't it romantic? **12 Midnight,** Weather Forecast and Announcements. **12.5 a.m.** (Friday), Spanish Songs. **12.15,** Hawaiian Guitar Music. **12.30** (approx.), Close Down.

TRIESTE

247.7 metres; 10 kW.—**4.10 p.m.** till Close Down, See **Turin.**

TRONDHEIM.—See **Oslo.**

TURIN

273.7 metres; 7 kW. Relayed by **Milan, 331.5 metres; Genoa, 312.8 metres;** and **Florence, 500.8 metres.—4.10 to 5.0 p.m.,** Orchestral Concert: Overture, Luisa Miller (Verdi); Selection from L'uomo che ride (Pedrollo); Two Pieces from Piedmontese Scenes (de Nardis): (a) Racconto, (b) Ninna Nanna; Mistica (Tirindelli); Intermezzo from Romeo and Juliet (Zandonai). **5.35,** Giornale Radio, Agricultural and Dopolavoro Notes. **6.0,** Gramophone Records of Variety Music. In the intervals at **6.20,** Giornale Radio, and at **6.30,** Time, Announcements and Tourist Report. **7.0,** Giornale Radio, Weather and Light Music on Gramophone Records. **7.15** (approx.), Relay of an Opera. In the intervals: Talk, Literary Notes and Giornale Radio.

VATICAN CITY

19.84 metres (Morning), and **50.26 metres (Evening);** 10 kW.—**10.0 to 10.15 a.m.,** Religious Information in French. **7.0 to 7.15 p.m.,** Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by **Graz, 342.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 245.9 metres;** and **Salzburg, 218.5 metres.—3.25 p.m.,** Talk: Sorcery in Antiquity. **3.50,** Topical Report in Esperanto. **4.5,** Concert by Isy Geiger and his Orchestra. Selection from Tosca (Puccini); Humoresque (Dvorák); Prelude (Rachmaninov); Dance of the Dervishes (Bendix); A Street Scene (Xaver); Waltz Song (Fleming); Tango, Schlaf mein Herzchen (Altschuler); Song Ich war' so gern einmal verliebt, from the Operetta, Sissy (Kreisler); Tango, Du schwarzer Zigeuner (Vacek); Song, Nur ein Lied und ein Mädel aus Wien (Schieder); Offenbach Potpourri (Conrad); Popular Songs (Geiger). **5.15,** Talk: The Feminist Movement. **5.40,** Talk: Commercial Documents from a Legal Point of View. **5.55,** Talk: The Federal Theatre Week. **6.15,** Time, Weather and Programme Announcements. **6.25,** Relay from the Royal Opera House. In an interval, News, Weather and Announcements. **9.5,** Snow Report. **9.20,** Dance Music by Juan Llossas and his Band, relayed from Hübner's Palais de danse.

WARSAW

1,411 metres; 120 kW.—**10.58 a.m.,** Bugle Call from St. Mary's Church, Cracow. **11.5,** Programme Announcements. **11.10,** Light Music on Gramophone Records. **11.30,** Weather Forecast. **11.35,** Seventeenth Concert for Schools by the Warsaw Philharmonic Orchestra, conducted by S. Nawrot and Soloists: A. Dobosz (Tenor) and T. Zygadlo (Violin). **1.0 to 2.10,** Interval. **2.10,** Announcements. **2.15,** Economic Notes. **2.25,** Popular Music on Gramophone Records. **2.35,** Review of Periodicals. **2.50,** Light Music on Gramophone Records. **3.25,** Intermediate French Lesson. **3.40,** Talk on the Human Body. **4.0,** Quintet in E Flat, Op. 16, for Wind Instruments (Beethoven), on Gramophone Records. In the interval, Announcements. **4.40,** Topical Talk. **4.55,** Programme Announcements. **5.0,** Talk on the Polish Writer Jean Kochanowski. **5.20,** News. **5.25,** Light Orchestral Concert, relayed from the Cristal Restaurant. **6.0,** Miscellaneous Items. **6.20,** Agricultural Report. **6.30,** Dialect Reading. **6.45,** Radio Journal. **7.0,** Talk: The Hundredth Anniversary of the Warsaw Grand Theatre. **7.15,** The Barber of Seville—Opera (Rossini), relayed from the Grand Theatre. In the interval, Sports Notes and Radio Journal. **10.30,** Dance Music, relayed from the Gastronomia Restaurant. **11.0** (approx.), Close Down.

WILNO

563 metres; 16 kW.—**6.10 p.m.,** Answers to Correspondents. **6.30,** Miscellaneous Announcements. **6.45 to 10.0,** See **Warsaw. 10.0,** Relay of Foreign Stations. **11.0** (approx.), Close Down.

ZAGREB

307 metres; 0.75 kW.—**4.0 p.m.,** Balalaika Concert. **5.30 to 6.20,** Interval. **6.20,** Announcements. **6.40,** Talk. **7.5,** Introductory Talk to the following Transmission. **7.15,** See **Warsaw.** In the interval, News, Weather, and Snow Report. **10.30** (approx.), Close Down.

ZURICH.—See **Schweizerischer Landessender.**

Ingjebörg Gresvik (Pianoforte). Pianoforte Concerto No. 2 in C Minor (Rachmaninov); Elegy and Musette from King Christian (Sibelius); Spanish Caprice (Rimsky-Korsakov); Overture, 1812 (Tchaikovsky). **8.30,** Agricultural Notes, Weather and News. **9.0,** Topical Talk. **9.15,** Recitations by Helge Krogh. **9.45** (approx.). Close Down.

OSTERSUND.—See **Stockholm.**

PALERMO

542 metres; 3 kW.—7.0 p.m., Dopolavoro Notes. Tourist Talk, Agricultural Report. Report of the Royal Geographical Society and Giornale Radio. **7.20,** Variety Music. **7.30** (in an interval). Time Signal and Announcements. **7.45,** Rigoletto—Opera in Four Acts (Verdi), on Gramophone Records. In the intervals, Talk and Literary News. **9.55,** News Bulletin.

PARIS

EIFFEL TOWER. Call FLE, 1.445.7 metres; 13 kW. Time Signals (on **2,650 metres**) at **9.26 a.m. and 10.26 p.m.** (Preliminary and 6-dot Signals.) **5.45 p.m.,** Le Journal Parlé. **7.20,** Weather Report. **7.30,** Concert of Sea Music, conducted by Edouard Flament: Ouverture, Meerstille und glückliche Fahr (Mendelssohn); Symphonie Poem, Sur la mer lointaine (Moreau); Sea Pieces (MacDowell); Piece (Nerini); Rafales sur l'Ocean (Flament); En yacht le soir (Schmitt); Un bruit de rames (Février); Chants de matelots (de Sévérac). **8.15,** News Bulletin. **8.30,** Musical and Literary Programme for Young People. **9.0** (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—**6.45 p.m.,** Journal Parlé. **7.0,** Gramophone Concert of Light Music. **8.0,** Talk on Music. **8.15,** Interval. **8.30,** Operetta Music (Planquette) by the Station Symphony Orchestra. **10.30,** News.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—**6.45 a.m.,** Physical Culture. **7.30,** Weather and Physical Culture (contd.). **7.45,** Probable Relay of the Test Match from Australia. **8.0,** Press Review and Weather. **8.30,** Test Match Relay (contd.). **8.45 to 12.0 Noon,** Interval. **12.0,** Jewish Address. **12.30 p.m.,** Concert by the Krettly Orchestra: Jupiter Symphony (Mozart); Jubel-Ouverture (Weber); Kinderszenen (Schumann); Violin Solo, Berceuse (Brahms); Pastorale (Franck); Allegro from a Quintet (Schumann); La forêt bleue (Aubert); The Garden of Eden (Silver); L'enfant et les sortileges (Ravel). In the interval at **1.0 p.m.,** Exchange, News, and Weather, and at **1.30,** Exchange. **2.0,** Exchange. **3.45,** Exchange and Market Prices. **4.30,** Advanced English Lesson. **4.50 to 6.10,** Interval. **6.10,** Agricultural Talk. **6.30,** Market Prices, Weather and Agricultural Notes. **6.35,** Suite, Par tous Pays (Lacôme). **6.50,** Insurance Report. **7.0,** Talk on Economics. **7.20,** Concert by the Krettly Orchestra: Melody (Candiolo); La Do, La Do (Guejol); Musical Sketch (Chevaillier); Four Pieces (Steck); Chasse joyeuse (Dyck). **7.45,** Commercial Prices and News. **8.0,** Readings. **8.30,** News and Weather. **8.40,** Gastronomic Review. **8.45,** Chamber Music: Soloists, Alys Lautemann (Harp) and Serge Tenenbaum (Violin): Quartet in C, No. 2 (Haydn); Harp Solos (Tournier): (a) La Volière magique, (b) Cloches sous la Leige, (c) La Danse du Moujik; Violin Solos: (a) Grave (Friedemann-Bach), (b) Nina (Falla), (c) Jota (Falla); Quintet (Novak). **9.15,** Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW. Relayed by **W8XK** on **48.86 metres** and **25.27 metres.—9.0 p.m.,** Work-a-Day Thoughts. **9.5,** Business News. **9.15,** S.A.I. Musicale (Carnegie Tech Chapter). **9.30,** Weather Report. **9.32,** Market Reports. **9.45,** Pianoforte Interlude. **9.50,** David Lawrence Dispatch. **9.55,** KDKA Artist Bulletin. **9.58,** Programme Announcements. **10.0,** Muskingum College Music Clubs. **10.30 to 11.15, New York** Relay. **10.30,** The Singing Lady. **10.45,** Little Orphan Annie. **11.0,** Our Daily Food, by George Rector and Judge Gordon. **11.15,** Time Signal. **11.16,** Weather Report. **11.17,** Teaberry Sport Review. **11.22,** Press News Reeler. **11.27,** Strange Facts. **11.29,** Temperature Report. **11.30,** KDKA Orchestra. **11.45 to 3.15 a.m. (Saturday), New York** Relay. **11.45,** To-day's News by Lowell Thomas. **12 Midnight,** Pepsodent Amos 'n' Andy. **12.15 a.m.,** Hilda Burke (Soprano). **12.30,** Five Star Theatre—Charlie Chan. **1.0,** Nestle's Programme. **1.30,** Time Signal and Adventures in Health. **1.45,** Howard Thurston, the Magician. **2.0,** The First Nighter. **2.30,** Armour Programme. **3.0,** Alice Joy with Rollickers. **3.15,** Westinghouse Pioneers. **3.30,** Bridge School of the Air by E. Hall Downes. **3.45,** Bradley Kincaid. **4.0,** Time Signal. **4.1,** Teaberry Sport Review. **4.11,** Temperature Report. **4.12,** Weather Report. **4.13,** KDKA Artist Bulletin. **4.15,** Press Last Minute News Flashes. **4.20,** Cora Williams Hines (Contralto). **4.30,** Henry Halstead and his Californians. **5.0,** Cotton Club Orchestra, from **New York. 5.30,** Time Signal and Goodnight.

PORSGRUND.—See **Oslo.**

POZNAN

335 metres; 1.9 kW.—**6.5 p.m.,** Miscellaneous Items and Announcements. **6.28,** Time Signal. **6.30,** See **Warsaw. 9.40,** Time Signal, Sports Notes and Police Report. **9.45,** See **Warsaw. 9.50,** Announcements. **10.0,** Dance Music relayed from the Café Esplanade. **11.50** (approx.), Close Down.

PRAGUE

488.6 metres; 120 kW.—**3.10 p.m.,** See **Brno. 3.55,** Talk: Esthonia—Fifteen Years a Republic. **4.5,** Concert by the Ondricek Quartet. Trio for Strings in E Flat (Mozart); Trio for Strings in D (Beethoven). **5.5,** Agricultural Report. **5.15,** Talk for Workers. **5.25,** News in German. **5.30,** Saxophone Solos by Vilem Fleischhans, Berceuse de Jocelyn (Godard); Concert Waltz, Fata Morgana (Pelikan); Liebesleid (Kreisler). **5.45,** Military Band Concert: March (Uhlir); Overture, La clemenza di Tito (Mozart); Fantastic Polonaise (Suk); Selection from The Huguenots (Meyerbeer); Introduction to the Third Act of The Devil and Kate (Dvorák); Fantasia on The Swan Lake (Tchaikovsky-Uhlir); Dance of the Pygmies (Oberthor); Ballet Music from The Bartered Bride (Smetana). **6.45,** News. **6.55,** Talk on the following Transmission. **7.15,** Act II of Siegfried—Opera (Wagner), relayed from the German Theatre. In the interval at **8.0,** Time Signal. **8.30,** News. **8.40,** Running Commentary on the International Ice Hockey Championship, relayed from the Winter Stadium. **8.45,** Talk on the following Transmission. **8.55,** Act III of Siegfried, from the German Theatre. In the interval at **9.0,** Time Signal. **10.5,** Running Commentary on the International Ice Hockey Championship, relayed from the Winter Stadium **10.15,** Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; **LAUSANNE, 680 metres;** and **GENEVA, 760 metres.—6.15 p.m.** (from **Geneva**), Talk: The Work of the League of Nations. **6.55** (from **Lausanne**), Lesson for Young Gompositors. **7.0** (from **Lausanne**), Orchestral Concert, relayed from Le Métropole Bel-Air. **7.30** (from **Lausanne**), Extracts from Henriette (Morax and Doret). **8.10** (from **Lausanne**), Reading (Peitrequin). **8.20** (from **Lausanne**). Concerto da Camera for Pianoforte and String Quartet (Stierlin-Vallon). Soloist: Yvonne Gamboni (Pianoforte). **9.0,** News and Weather. **9.15** (approx.), Close Down.

RIGA

525 metres; 15 kW.—**4.40 p.m.,** Wind Instrument Concert. **5.40,** Latvian Lesson. **6.10,** Weather Report. **6.15,** Esthonian National Festival Concert. Addresses by M. A. Alberings and Prof. A. Piips. Music by a Students' Choir. Sobists: Milvi Laid (Songs), Juta Kipasts (Pianoforte), and Nikolajs Vaislievs (Tenor). In the interval at **7.0,** News. After the Concert, Programme of Variety Music. **9.30** (approx.), Close Down.

RJUKAN.—See **Oslo.**

ROME

Call 1RO, 441 metres; 50 kW. Relayed by **Naples, 319 metres;** and **2RO. 25.4 metres.—7.0 a.m.,** Gymnastics. **7.15 to 7.30,** Giornale Radio and Announcements. **11.30,** Weather and Light Music on Gramophone Records. **12.0 Noon,** Time and Announcements. **12.2 to 1.15 p.m.,** Orchestral Concert. In the interval from **12.30 to 12.45,** Giornale Radio and Exchange. **3.0,** Concert by the Calvet Quartet, relayed from the Santa Cecilia Royal Academy. **6.10 (Naples),** Shipping and Sports Notes. **6.15,** Agricultural and Dopolavoro Notes. **6.20,** Giornale Radio and Light Music on Gramophone Records. **7.0,** Time and Announcements. **7.5,** Report of the International Institute of Agriculture (in Italian, French, English, German and Spanish). **7.30,** Talk on Sport, followed by Sports Notes and Tourist Report. **7.45,** Concert of Italian Music. Soloists: Emilio Livi (Tenor), Guglielmo Castello (Baritone). Largo (Mulè); La bottega del caffè (Malipiero); Tenor Solos: (a) Aria from Anima allegra (Vittadini), (b) Visione veneziana (Brogi), (c) Aria from La Favorita (Donizetti), (d) Stornelli capriccioni (Carnevali); Baritone Solos: Nocturne and Monologue from Christopher Columbus (Franchetti). **8.30,** Pesca notturna—Comedy in One Act (Edoardo Grella). **9.0,** Extracts from Marcella (Giordano). **9.30** (approx.), Dance Music. **9.55** (in an interval), News. **10.30** (approx.), Close Down.

SALZBURG.—See **Vienna.**

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 379.5 metres; 50 kW. Relayed at intervals by **W2XAF** on **31.48 metres** and by **W2XAD** on **19.56 metres.—7.30 p.m. to 12.15 a.m. (Saturday), New York** Relay. **7.30,** Three Shades of Blue—Male Trio. **7.45,** Muted Strings. **8.0,** Spross and Rice Sonata Recital. **8.15,** Famous Loves—Dramatic Programme. **12 Midnight,** Donald Novis (Tenor). **12.15 a.m.,** Stock Reports. **12.30 to 1.30, New York** Relay. **12.30,** Three Keys—Harmony Trio. **12.45,** The Goldbergs. **1.0,** Cities Service Concert. **1.30,** WGY Farm Forum. **2.0,** K7 Secret Service Spy Stories. **2.30,** Pond's Programme—Leo Reisman's Orchestra. **3.0,** Programme Resumé.

SCHWEIZERISCHER LANDESSENDER

BEROMUNSTER, 459 metres; 60 kW.; **BASLE, 244.1 metres;** and **BERNE, 245.9 metres.—11.28 a.m.,** Time Signal from Neuchâtel Observatory. **11.30,** Weather and News. **11.40,** Concert by the Small Station Orchestra. **12.35 p.m.,** Weather and Exchange. **12.45 to 2.30,** Interval. **2.30,** Concert of Light Music by the Station Orchestra. **3.30** (from **Zürich**), Programme for Children. **4.0,** Popular Music on Gramophone Records. **4.30,** Weather. **4.35 to 5.30,** Interval. **5.30** (from **Berne**). Talk by Christian Lerch: My Experiences as a Swiss Emigrant to Canada. **6.0,** Time, Weather, Market Prices, Tourist Talk and Sports Notes. **6.20** (from **Berne**), Popular Concert. **6.45** (from **Zürich**), Song Recital by Lucie Bredschneider (Soprano). **8.30,** Weather and News. **8.40** (from **Zürich**), Concert by Marek Weber and his Orchestra, relayed from the Grand Café Sihlporte. **9.15** (approx.), Close Down.

SOTTENS.—See **Radio-Suisse Romande.**

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by **Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,348 metres; Ostersund, 770 metres;** and **Sundsvall, 542 metres.—6.5 p.m.,** Boy Scouts' Report. **4.25** (from **Göteborg**), Provincial Programme. **5.0,** Popular Music on Gramophone Records. **5.55,** Legal Talk. **6.15,** Weather and News. **6.30,** Talk. **6.45,** Recital of Scandinavian Songs by Marianne Mörner. **7.15,** An American Tragedy—Play (Patrick Kearney, after the Novel by Theodore Dreiser). **8.45,** Weather and News. **9.0,** Orchestral Concert: Petite suite de concert (Coleridge-Taylor); An den Frühling (Grieg); Waltz, I sommarnatt (Söderström); Two Old Dances (Moszkowski); Tango from The Three Musketeers; Söderman-Mosaik (Rudolf); Pasodoble, Saragossa (de Gredos). **10.0** (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—**11.30 a.m.,** Gramophone Concert of Popular Music. **12.45 p.m.,** News. **1.0,** Time and Exchange. **1.5,** Orchestral Concert, conducted by Maurice de Villers: Suite Carnavalesque (Fracis-Thomé); Overture, Paragraph III (Suppé); Waltz, La Barcarolle (Waldteufel); Selection from Paganini (Lehar). **2.0 to 4.45,** Interval. **4.45,** Literary Talk in French. **5.0,** Orchestral Concert of Jazz Music, conducted by Roskam: One Step, Marching along together; Foxtrot, You're telling me; Foxtrot, Let's put out the Light; Waltz, Little Spanish Villa by the Sea; Foxtrot, Roses at Dawning; Foxtrot, Wherever you are; Sag' mir nicht Nein, sag' mir Veilleicht; Foxtrot, Never swat a Fly; Foxtrot; Waltz, Très jolie (Waldteufel); Foxtrot, Lost Lover; Foxtrot, How deep is the Ocean; Tango, Al mio villagio laggia (Bochmann); Foxtrot, Madeline; Foxtrot, That babe is stuck on me; One Step, You're the one. **6.0,** Trio Concert, relayed from **Lille (265.4 metres). 7.0,** Topical Talk in German. **7.15,** Talk in French: The Modern House. **7.30,** Time and News. **7.45,** Stravinsky Music on Gramophone Records: Capriccio for Pianoforte and Orchestra; Selection from The Fire Bird. **8.25,** Lottery Results. **8.30,** Rousard-Verlaine Evening relayed from the Hector-Berlioz Hall. Soloist: Gabrielle Gills (Songs), with Maurice Franck at the Pianoforte, and Jacques Copeau (Recitations). Part I—Ronsard: Recitation of Sonnets and Songs; Songs: (a) Attributs (Poulenc), (b) Le tombeau (Poulenc), (c) A son page (Poulenc), (d) Chanson (Honegger), (e) Doux fut le trait (Caplet), (f) Ronsard à son âme (Ravel). Part II—Verlaine: Airs (Fauré): (a) Spleen, (b) En sourdine, (c) Prison, (d) Mandoline; Recitation, Sagèsse; Songs (Debussy): (a) Clair de lune, (b) L'échalonnement des haies, (c) Extase, (d) Mandoline; Recitations. **10.30** (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres, 60 kW.; and **FREIBURG, 570 metres.—12.30 p.m.,** Concert from **Langenberg. 1.0,** Sponsored Gramophone Concert. **1.30 to 2.0,** Advanced English Lesson. **4.0,** See **Frankfurt. 4.50,** Time, Weather and Market Prices. **5.0,** Talk for the Amateur Photographer. **5.25,** Medical Talk. **5.50** (from **Karlsruhe**), Talk on Sunday Rambling. **6.0,** Time and News. **6.10,** Ballads and Songs by Löwe and Hermann—a Recital by Karl Yeutsch. **6.30** Upper-Bavarian Humour. **6.50,** Concert of Swabian Peasant Dances, by Members of the Station Orchestra, conducted by Gustav Görlich. **7.15** (from **Mannheim**), Dialogue: People and their Callings—the Press Stenographer. **7.30,** Fatinitza—Comic Opera in Three Acts (Suppé). **9.10,** Time, News, Weather, Snow Report. Programme Announcements and Sports Notes. **9.40,** Dance Music on Gramophone Records. **10.0,** Gustav Meyrink Programme, relayed from the Ufa Palast: Angst—from the Novel Der Golem, with Music by Wilhelm Locks; Der Fluch der Kröte—Melodrama (Music by Arnold Winternitz). **10.30** Dance Music on Gramophone Records. **11.0** (approx.), Close Down.

SUNDSVALL.—See **Stockholm.**

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—**6.15 p.m.,** Violin Music. **6.30,** Opera Music: Aria from The Fair Maid of Perth (Bizet); Quartet from La Bohême (Puccini); Aria from Mignon (Thomas). **6.45,** A Night on the Barc Mountain (Mussorgsky), by a Symphony Orchestra. **7.0,** Tourist Report. Report. **7.15,** News, Racing Results and Market Prices. **7.25,** Local News and Market Prices. **7.30,** Concert. Part 1: Opera Music; Part II, Dance Music. **8.0,** Concert by a Viennese Orchestra. **8.30,** Chansonnettes. **8.45,** Extracts from L'Arlésienne (Bizet). **9.15,** Opera Music: Finale from the Second Act of Carmen (Bizet); Two Arias from Romeo and Juliet (Gounod); Aria from Werther (Massenet). **9.30,** Military Music. **9.45,** Extracts from Sound Films. **10.0,** Instrumental Music. **10.15,** North-African News. **10.30,** Concert for Listeners in Morocco. **11.15,** Humorous Pieces. **11.30 to 12 Midnight,** Programme in English by the I.B.C. **11.30,** Vocal and Orchestral Concert, Mr. H. K. Hitchcock announcing: Souvenirs classiques (arr. Chenil); Songs: (a) The Jolly Young Waterman (Dibdin), (b) Where'er you walk (Handel); Hungarian Dance (Brahms); Dancing Doll (Poldini); Songs: (a) The Pipes of Pan (Monckton), (b) Down in the Forest (Ronald), Echoes (arr. Chenil). **11.55,** I.B.C. Goodnight Melody. **12 Midnight,** Weather Forecast. **12.5 a.m. (Saturday),** Accordion Music. **12.15,** Dance Music. **12.30** (approx.), Close Down.

TRIESTE

247.7 metres; 7 kW. Relayed by **Milan, 331.5 metres; Genoa, 312.8 metres;** and **Florence, 500.8 metres.—3.0 p.m.,** See **Rome. 5.35,** Giornale Radio, Agricultural and Dopolavoro Notes. **6.0,** Variety Music on Gramophone Records. In the intervals at **6.20,** Giornale Radio, and at **6.30,** Time, Announcements and Report of the Royal Geographical Society. **7.0,** Giornale Radio, Weather, and Light Music on Gramophone Records. **7.30,** Talk on Sport, followed by Gramophone Records (contd). **8.0,** Symphony Concert, conducted by Gino Marinuzzi. Talk in the interval. **10.0,** Giornale Radio.

TURIN

273.7 metres; 7 kW. Relayed by **Milan, 331.5 metres; Genoa, 312.8 metres;** and **Florence, 500.8 metres.—3.0 p.m.,** See **Rome. 5.35,** Giornale Radio, Agricultural and Dopolavoro Notes. **6.0,** Variety Music on Gramophone Records. In the intervals at **6.20,** Giornale Radio, and at **6.30,** Time, Announcements and Report of the Royal Geographical Society. **7.0,** Giornale Radio, Weather, and Light Music on Gramophone Records. **7.30,** Talk on Sport, followed by Gramophone Records (contd). **8.0,** Symphony Concert, conducted by Gino Marinuzzi. Talk in the interval. **10.0,** Giornale Radio.

VATICAN CITY

19.84 metres (Morning), and **50.26 metres (Evening);** 10 kW.—**10.0 to 10.15 a.m.,** Religious Information in German. **7.0 to 7.15 p.m.,** Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by **Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 245.9 metres;** and **Salzburg, 218.5 metres.—3.45 p.m.,** Concert of English Music by the Gottesmann Quartet. Soloists: Luise Helletsgruber (Soprano), Josef Berzé (Tenor), Jella Pessl (Harpsichord and Pianoforte), Franz Wangler (Flute) and Wilhelm Pawlik (Cor anglais). **5.0,** Tourist Report. **5.15,** Talk: Ski-Jumping in Austria. **5.40,** Talk: The Education of the Unemployed. **5.55,** Talk: A Visit to the Lava Lake, Matawanu, in Samoa. **6.20,** Time, Weather and Programme Announcements. **6.30,** Violin Duets by Christa Richter and Georg Steiner: Sonata in E for Two Violins and Pianoforte (Handel); Canon and Fugue in Old Style (Reger); Vivace from Op. 39 (Spohr); Small Suite in Old Style, Op. 9, for Two Violins and Pianoforte (Kricka). **7.5,** Der Geist des gemordeten Markensteiner—Play in Five Acts (Josefine Weiss). **8.55,** News, Weather and Snow Report. **9.10,** Traffic Report. **9.25,** Music from Paper. **9.55,** Dance Music by Fred Clement's Orchestra, relayed from the Grabencafé.

WARSAW

1,411 metres; 120 kW.—**10.58,** Time Signal and Bugle Call from St. Mary's Church, Cracow. **11.5,** Programme Announcements. **11.10,** Light Music on Gramophone Records. **12.20 p.m.,** Weather Forecast. **12.25 to 2.10,** Interval. **2.10,** Announcements. **2.15,** Economic Notes. **2.25,** Aviation Notes and Anti-gas Drill. **2.30,** Talk on Maritime and Colonial Affairs. **2.35,** Review of Periodicals. **2.50,** Light Music on Gramophone Records. **3.20,** Talk on Rome, relayed from **Wilno (563 metres). 3.40,** Biological Talk. **4.0,** Esthonian Programme. **4.50,** Announcements. **4.55,** Programme Announcements. **5.0,** Talk on the Polish Writer, Pierre Skarga. **5.20,** News. **5.25,** Concert of Esthonian Music by Hans Höpfe (Pianoforte). **5.50,** Ski-ing Notes, relayed from **Cracow (312.8 metres). 6.0,** Miscellaneous Announcements. **6.20,** Polish and Foreign Agricultural Reports, relayed from **Wilno. 6.30,** Talk on Commerce. **6.45,** Radio Journal. **7.0,** Talk on Music. **7.15,** Symphony Concert by the Warsaw Philharmonic Orchestra, conducted by G. Fitelberg. Soloist: Vasa Prihoda (Violin): Overture, Euryanthe (Weber); Violin Concerto in D (Brahms); Sinfonia technica (Zador); Contes (Wieniavsky). In the interval: Talk on Poetry with Illustrations. **9.40,** Sports Notes. **9.45,** Radio Journal. **9.55,** Aviation Weather Report and Police Notes. **10.0,** Dance Music from the Oaza. **11.0** (approx.), Close Down.

ZURICH.—See **Schweizerischer Landessender.**

SATURDAY

FEBRUARY THE TWENTY-FIFTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL — Ireland *v.* Scotland: A running commentary on the International Rugby Football Match, relayed from Dublin. Recital of gramophone records. Vaudeville programme. "Old Favourites," dance programme.

LONDON REGIONAL — Mr. S. P. B. Mais: "The Week-End." Royal Air Force Band concert. Orchestral concert. Chamber music.

MIDLAND REGIONAL — "Cleobury Mortimer and Ludlow," by Catherine Constable. Dance music. Organ recital. Orchestral concert.

NORTH REGIONAL — "Beckside Chronicles," by Zachariah Briggus. Promenade concert from Philharmonic Hall, Liverpool.

WEST REGIONAL — Mr. Rhys Phillips: "A Visit to Glyn Nedd." Orchestral concert from National Museum of Wales. Choral concert, relayed from Colston Hall, Bristol. "A Stitch in Time," an appeal for co-operation.

SCOTTISH REGIONAL — Eye-witness account of Scottish League Match: Rangers *v.* Dundee. Orchestral concert. Mr. George Blake: "The Week in Scotland."

BELFAST — Ireland *v.* Scotland, a running commentary on the International Football Match. Light programme of gramophone records. Orchestral concert, relayed from Ulster Hall.

ABROAD

ATHLONE — "The Arcadians" operetta, by Monckton and Talbot.

BERO-MUNSTER — The Basle Music Society, conducted by Felix Weingartner.

ATHLONE

413 metres; 60 kW.; and CORK, 224.4 metres. 1.30 to 2.0 p.m., Time Signal, Weather Report, Stock Report, and Light Music on Gramophone Records. 2.45, Running Commentary on the International Rugby Match, Ireland v. Scotland, relayed from Lansdowne Road, Dublin. 4.30 (approx.) to 7.20, Interval. 7.20, News Bulletin. 7.30, Time Signal. 7.31, Talk by Thomas Shaw: Allotments. 7.45, Gaelic Talk. 8.0, The Arcadians—Operetta (Monckton and Talbot), by the Station Orchestra, the Station Opera Chorus, and Principals. Conductor, Dr. Vincent O'Brien. 10.30, Time Signal, News, Weather Report, and Close Down.

BARCELONA

RADIO BARCELONA, Call EAJ1, 348.8 metres; 8 kW.—6.0 p.m., Programme for Children. 7.0, Request Gramophone Concert. 7.30, Exchange Quotations and Catalan Grammar Lesson. 8.0, Light Music on Gramophone Records, followed by News Bulletin. 9.0, Chimes from the Cathedral, Weather Forecast, Exchange Quotations, and Market Prices. 9.5, Concert by the Station Orchestra: Military March (Daleroze); Selection from El Barquillero (Chapi); Waltz, Was Blumen traumen (Translateur); Angelus (Debussy); Melody from Parsifal (Wagner); Song and Wedding March (Pahissa). 10.0 Astronomical Talk. 10.15, Concert by a Mandoline Orchestra; Largo and Scherzo from Sonata No. 2 (Beethoven); Ochsen menuett (Haydn); Selection from Tannhäuser (Wagner); Gavotte (Duran); Spanish Serenade (Espi); Orientale (Santos); Sardana, La Santa Espina (Morera). 11.0, News Bulletin, followed by Sextet Concert, relayed from the Granja Royal. 12 Midnight (approx.), Close Down.

BARI

269.8 metres; 20 kW.—7.0 p.m., Agricultural Report, Tourist Talk and Dopolavoro Notes. 7.20, Giornale Radio and Weather Forecast. 7.30, Time Signal and Announcements. 7.35, Military Band Concert, conducted by Salvatore Rubino: Selection from Il Guarany (Gomez); Hymn to the Sun and Selection from Iris (Mascagni); Suite in Three Movements from Sigurd Jorsalfar (Grieg); Selection from Act I of William Tell (Rossini); Bolero for Clarinet (Blémant); Marcia de Decennale (Marincola). In the interval: Talk. 9.30, Concert, relayed from the Gran Caffe del Levante. 9.55, News Bulletin.

BASLE.—See **Schweizerischer Landessender.**

BELGRADE

430.4 metres; 2.8 kW.—6.0 p.m., Wireless Notes. 6.30, Variety Music on Gramophone Records. 6.50, Talk on the following Transmission. 7.0, Relay from the Zagreb National Theatre. In the interval at 8.30, News. After the Relay, Dance Music on Gramophone Records.

BERLIN

KONIGS WUSTERHAUSEN; 1,635 metres; 60 kW.—12.35 p.m., News Bulletin. 1.0, Gramophone Concert from **Berlin (Witzleben).** 2.0, Programme for Children—the Carnival Procession in Cologne. 2.30, Weather and Exchange. 2.45, Reading: Der Geistenblick (Otto Baron von Taube). 3.0, Talk by D. Seeliger. 3.30, See **Hamburg.** 4.10, Review of the Week. 5.0, Chamber Music. New Songs of Africa and America. Recital by Rolf Ghatberg. Three Songs (Kurt Fahlen): (a) Vor uns liegt Morgen, (b) Angst, (c) Auch ich bin Amerika. Three Songs (Béla Reinitz): (a) Lied aus Dixieland, (b) Weisser Bruder, was wirst du sagen? (d) Schatten uber Harlem. Three Songs (Wilhelm Gross): (a) Lied der Baumwollpacker, (b) Das neue Kabarettmädel, (c) Schnaps-Mary. Two Songs (Rudolf Holzmann): (a) Nachtklub Harlem, (b) Meiner! 5.30, Dialogue, with Illustrations on Problems of the Art of Singing. 5.55, Weather and Announcements. 6.0, The Quiet Hour—North German Reflections. 6.30, A Poem. 6.35, Violin Recital by Lisa Minghetti: La folia (Corelli); Melody (Gluck-Kreisler); Allegro (Fiocco); Larghetto (Nardini); Theme, with Variations (Tartini-Kreisler). 7.0, See **Langenberg.** 9.0, Weather, News, and Sports Notes. 9.45, Weather Report for Shipping. 10.0, Dance Music from **Berlin (Witzleben).** 11.0 (approx.), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—3.0 p.m., Concert, arranged by the German Composers' Society, relayed from the Clou Konzerthaus; Conductor: Hermann Männecke: Kyffhäuser - Marsch (Pfeuffer); Heitere Ouvertüre (Friedl-Renée); Suite, Von Felsen und Tal (Juel-Frederiksen); Romance (Fresco); Waltz Fantasia, Die drei von Ballet (Köhler); Selection from The Lady of the Rose (Gilbert); Varieté-Suite in Four Movements (Königsberger); Waltz, Dame in Braun (Robrecht); Selection from Glückliche Reise (Künneke); In den Zelten (Raasch); Eine Kleinbahnfahrt (Rathke); Strassenlümmel - Marsch (Bernards). 5.0, Talk: The Present Position of the Intellectual Worker. 5.25, Pianoforte Trio in C Minor, Op. 101 (Brahms), by Dr. Hanns Rohr (Pianoforte), Hedwig Fassbaender (Violin), and Ludwig Fassbaender (Cello). 5.55, The Witzleben Station informs its Listeners . . . . 6.0, Topical Talk. 6.10, From Fair to Fair—Report on the Berlin Weekly Markets. 7.0, All about Carnival—a Variety Programme. 9.0, Weather, News, and Sports Notes. 9.15 (approx.), Dance Music, relayed from the Marmorsaal in the Zoo. 11.30 (approx.), Close Down.

BERNE.—See **Schweizerischer Landessender.**

BEROMUNSTER. — See **Schweizerischer Landessender.**

BODEN.—See **Stockholm.**

BODO.—See **Oslo.**

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—7.40 p.m., Sports Notes. 7.45, Light Music on Gramophone Records. 8.0, News, Exchange Quotations, Market Prices and Lottery Results. 8.5, English Lesson. 8.20, News Bulletin and Weather Forecast. 8.30, Popular Music on Gramophone Records. 9.0, Concert of Operetta Music, by a Symphony Orchestra and Soloists.

BRATISLAVA

279 metres; 11 kW.—3.10 p.m., Concert by the Station Orchestra, conducted by Josef Odchazel. 4.10, See **Prague.** 4.20, Light Music on Gramophone Records. 4.50, Talk. 5.5, See **Prague.** 5.25, Popular Music on Gramophone Records. 5.45, Talk for Housewives. 6.0, See **Prague.** 6.25, Light Orchestral Concert. 7.0, An Operetta in One Act (Rudolf Bial). 8.30, See **Prague.** 10.30 (approx.), Close Down.

BREMEN.—See **Hamburg.**

BRESLAU

325 metres; 60 kW; and **GLEIWITZ, 253 metres.**—12.10 p.m., Gramophone Concert of Popular Music. 12.45, Time, Weather, News and Exchange. 1.5, Gramophone Concert. 1.45, Sponsored Programme on Gramophone Records. 2.10, Agricultural Prices. 2.40, Film Review of the Week. 3.0, Talk: Valerno. 3.30, See **Hamburg.** 4.30, Book Review. 4.50, Talk on Enrico Caruso, with Gramophone Illustrations. 5.20, Talk: The Public Monuments in Silesia. 5.50, From the Minuet to the Foxtrot—Dance Music on Gramophone Records. In an interval at 6.30 (approx.), Weather Forecast. 7.0, Topical Programme (to be announced). 7.30, Flucht ins Grüne—Radio Play (Wilhelm Kraemer) with Incidental Music by Karl Sczuka. 9.0, Time, Weather, News, Sports Notes and Programme Announcements. 9.30, Dance Music from **Berlin (Witzleben).** 11.0 (approx.), Close Down.

BRNO

342 metres; 35 kW.—3.10 p.m., See **Bratislava.** 4.10, Story Reading. 4.20, See **Prague.** 4.50, Esperanto Lesson. 5.0, Theatre and Film Review. 5.15, See **Prague.** 5.25, German Transmission: News, followed by Concert. 6.0, See **Prague.** 6.10, Reading. 6.25, See **Bratislava.** 8.30, See **Prague.** 10.30 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—12 Noon, Concert relayed from the Grand Hotel, Antwerp. Conductor: André Felleman. Soloist: Antoine Honemans (Cello). 1.0 p.m., Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by P. Lecmans. Soloist: M. Douliez (Pianoforte). 5.0, Concert by the Radio Orchestra, conducted by Charles Walpot. Soloist: M. Demessemaeker (Clarinet). "Unie-marche (Walpot); Waltz, Erinnerung an Josef Strauss (Fahrbach); Festival Overture (Leutner); Selection from Cavalleria rusticana (Mascagni); Campane a Sera (Billi); Concertino for Clarinet (Weber); Spanish Spite, La Feria (Lacôme). 6.0, Medical Talk. 6.15, Gramophone Concert: Symphonic Variations (Boëllmann); La source (Zabel); Carolina Moon (Davis). 6.30, Concert by the Small Station Orchestra, conducted by P. Lecmans. Soloists: M. Douliez (Pianoforte) and Mme. Mazo (Songs). Oriental March (Ross); Petite suite (Busser); Etudes for Pianoforte (Dupuis); Erotica (Grieg); Ich liebe dich (Grieg); Songs: (a) Invitation au voyage (Dupare), (b) Song (Brahms), (c) The Soldier's Wife (Rachmaninov), (d) La nuit (Wrangel); Berceuse (Gretchaninov); Suite Albanian (Kostal). 7.15, Talk: Modern Architecture. 7.30, Review of International Events. 8.0, Nocturne from the Quartet in D Minor (Borodin) on Gramophone Records. 8.5, Crépuscule (Twilight)—Radio Play (Georges Fay). 8.35, Concert by the Band of the First Regiment of Guides, conducted by Captain A. Prévost. After the Concert, Journal Parlé, followed by Concert relayed from the Ancienne Belgique. Conductor: M. Alexys.

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW. Programme in Flemish.—12 Noon, Concert by the Small Station Orchestra, conducted by P. Leemans. Soloist: M. Wigy (Violin). 1.0 p.m., Journal Parlé. 1.10, Concert relayed from the Grand Hotel, Antwerp. Conductor: André Felleman. 5.0, Concert by the Symphony Orchestra: Overture, Der Freischutz (Weber); First Suite from l'Arlésienne (Bizet); Carnaval à Paris (Svendsen); Spanish Dances (Falla); Juegas (Turina); Chasse fantastique (Guiraud). 6.0, Song Recital by M. Jochem. 6.15, Talk: Mars, its Canals and Inhabitants. 6.30, Gramophone Concert: Extracts from Symphony No. 7 (Beethoven); Air with Variations on a Swiss Theme (Mohr); Hungarian Rhapsody No. 2 (Liszt). 7.15, Talk: Children and their Reading. 7.30, Agricultural and Gardening Notes. 8.0, Student Programme. 9.0, Concert by the Symphony Orchestra, conducted by A. Meulemans. Soloist, Den Boer (Horn). Concerto for Horn and Orchestra (Mozart); Maroszcker Tänze (Kodaly); Antar (Rimsky-Korsakov); Overture, Tannhäuser (Wagner). 10.0, Journal Parlé. 10.10, Dance Music on Gramophone Records. 10.30, Concert by the Paul Moreaux Orchestra, relayed from the Menuline Hall, Antwerp. 12 Midnight (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—4.0 p.m., Concert of Light Music and Roumanian Music by the Sibiceano Orchestra. 5.0, News and Time Signal. 5.10, Talk. 5.25, Light Music (contd.). 6.0, Talk on Romania: Her Iron Deposits. 6.40, Light Music on Gramophone Records. 7.0, Time Signal. 7.1, Concert by the Station Orchestra: Parade of the Lead Soldiers (Jessel); Waltz potpourri (Robrecht). 7.30, Talk. 7.45, Dance Music by M. Sibiceano (Pianoforte). 8.15, Concert by the Station Orchestra (contd.): Oriental Tango (Leopold); Stolz Potpourri (Dostal). 8.45, News Bulletin.

BUDAPEST

550 metres; 18.5 kW.—Programme also relayed on **840 metres** from **5.45 p.m.** (approx.) till Close Down. **5.45 p.m.,** Concert arranged by the Hungarian Music Lovers' Society. 6.45, Talk on the Theatre and Art. 7.15, Guessing Competition. 8.0, Talk on Foreign Affairs. 8.45, News Bulletin. 9.0, Concert of Cigány Music from the Hotel Dunapalota. 10.0, Dance Music from the Hotel Dunapalota.

CASSEL.—See **Frankfurt.**

COPENHAGEN

281 metres; 0.75 kW.; and **KALUNDBORG, 1,153 metres;** 7.5 kW.—11.0 a.m., Time Signal and Chimes from the Town Hall. 11.2, Concert by the A. Bendix String Ensemble, relayed from the Wivex Restaurant. 1.0 to 1.30, Interval. 1.30, Gramophone Concert: Alessandro Valenté. Aria from Act I of Turandot (Puccini); Lotte Lehmann and Choir: German Folk Song, Es waren zwei Königskinder. Einar Larson: Sunday (Järnefelt). Bronislaw Hubermann: Waltz in A (Brahms). Lucienne Boyer: Ne m'en pas toujours (Lenoir). Ernst Schön: Original Tanganilla (Schacher and Bazant). Potpourri, Uns kennt jeder (Borchert). 2.0, Programme for Children. 2.30, Concert by Louis Preils' Instrumental Ensemble. Soloist: Dagny Möller (Songs). March (Holzmann); Waltz Idyll, Märchen aus dem Wienerwald (Ast); Serenade, A ta sola (Guiliam); Selection from J'adore ça Christiné; Donna vorrei morir (Tosti); Bubikopfchens Verlobung (Dicker); Pasodoble, Seville (Alfonso); Six Danish Songs. Potpourri, Ufaton-Bomben (Borchert); Plaisir d'amour (Martini); Swabian Peasant Waltz (Krome); Ballad (Windfeld); Hungaria (Black); In Rothenburg on the Tauber (May); Pianoforte Novelty (Steele). 4.40, Exchange and Fish Market Prices. 4.50, Talk. 5.20, Elementary French Lesson. 5.50, Weather and News. 6.15, Time Signal. 6.30, Talk. 7.0, Time Signal from the Town Hall. 7.1, Workers' Literature in other Lands—a Programme of Readings. 7.25 to 11.0, Radio Ball for the Older Generation. Dance Music by the Station Orchestra, conducted by Lanny Gröndahl. Soloists: Ayoë Willumsen and Hulda Didrichsen (Songs) and Viktor Fischer (Pianoforte). Exhibition March (Fahrbach); Hesperus Waltz (Lumbye); Mazurka, The Czarina (Ganne); Polka-Mazurka, Die schöne Polin (Millöcker); Waltz, Donauwellen (Ivanovici); Midnight Polka (Waldteufel); Four Songs; Hussar March (Lumbye); Polka Mazurka, La Neva (Métra); The Lancers (Mikel); Mirella (Munch-Lassen); Rhineland Polka; Gallop (Dahl); Pianoforte Solos; Waltz, Die Kosenden (Lanner); Quadrille from The Gipsy Baron (Joh. Strauss); Melody, Sophus Polka (Jensen); Aarhus Tattoo (Möller). 9.50, News. 10.5, Reading. 10.20, Dance Music (contd.): March, Andreas Hofer (Fétras); Waltz, Moonlight in the Ulster (Fétras); Polka Mazurka, Frauenherz (Jos. Strauss); Sextet, Spanish Mazurka; Dream Waltz (Millöcker); Prestissimo Gallop (Waldteufel). 11.0, Time Signal and Chimes from the Town Hall.

CORK.—See **Athlone.**

DANZIG.—See **Heilsberg.**

DRESDEN.—See **Leipzig.**

DUBLIN.—See **Athlone.**

FECAMP

223 metres; 10 kW.—12.0 Noon, Light Music on Gramophone Records. 12.30 p.m., News Bulletin. 12.45, Variety Concert. 6.0 to 7.0, Programme in English by the I.B.C., C. Danvers Walker, R. Chene, and B. McNab announcing. 6.0, Concert for Folkestone Listeners. Music by an Accordion Band: Selection from Carmen (Bizet); C'est un Petit Nid (Eblinger); J'aime la musique (Parson); Selection from Congress Dances (Heymann); La Javanette (Bozi); Les bas à pointes (Lefebre); Selection from Faust (Gounod). 6.30, Concert for Thanet Listeners: Old Music Hall Memories. Song: Captain Ginjah; Jean, Jean from Aber-Aberdeen; The Man who broke the Bank at Monte Carlo; The Galloping Major; When Father papered the Parlour; Two Lovely Black Eyes; More Old Music Hall Memories. 7.0, Local News. 7.15, Popular Music on Gramophone Records. 7.30, Radio Gazette. 8.0, The Listeners' Half-hour. 8.30, News. 8.45, Violin and Pianoforte Recital by M. Hème and M. Palier.

10.0, Café Concert. 11.0 till Close Down, Programme in English by the I.B.C. 11.0, International Broadcasting Club Concert of Special Request Items: Waltz, The Blue Danube (Strauss); Song: The Floral Dance (Moss); Sussex by the Sea (Ward Higgs); Love's Old Sweet Song (Molloy). 11.30, Concert of Light Music: The Bumble Bee's Wedding (Clare); Songs: (a) Bibby Mulligan, (b) At Dawning (Cadman); Chorus: The Dear Little Shamrock; The Grasshopper's Dance (Bucalossi); Songs: (a) My Lovely Celia (arr. Wilson), (b) Down by the Liffeyside; Invitation to the Waltz (Weber). 12.0 **Midnight**, Variety Concert: March, The Mighty Deep (Guy); Pass, Shoot, Goal; Morocco; Handsaw Solo: When I'm dreaming; Barracky Bert; Don't send my Boy to Prison; Handsaw Solo: Someone like you; Jungle Drums Patrol (Ketelbey). 12.30 a.m. **(Sunday)**, Concert of Songs. Pianoforte Solo: Song Medley; Trees; Lazy Louisiana Moon; Would you take me back again?; That's why Darkies were born; Melancholy; When it's sleepy time down South; Pianoforte Solo: Song Medley. 1.0, Harmonica and Zither Duets: Bonnie lass o' bon accord; The laird o' dunblair; The Rose in the Heather; Handsome Gigolo; Carnalava Mazurka; My Beauty Waltz; The Skirl of the Pipes; Polly. 1.30, Vocal Quartets and Orchestral Music: Darkies in the Farmyard; Nellie Gray; Orchestra: Dixieland (Stoddon); Down in the Cornfield; Polka Serenade; Home Sweet Home; Selection from The Show Boat (Kern). 2.0, Dance Music. 2.57, I.B.C. Good-night Melody. 3.0 (approx.), Close Down.

FLENSBURG.—See **Hamburg.**

FLORENCE.—See **Turin.**

FRANKFURT

259 metres; 17 kW.; and CASSEL, 245.9 metres.—2.30 p.m., Programme for Children. 3.50, Economic Notes. 4.0, See **Munich.** 5.15, Economic Notes. 5.25, Talk: Proposals for the Reform the Curl Code. 5.50, Talk: Wages in other Countries. 6.15, Time, Programme Announcements, Weather, and Economic Notes. 6.30, See **Stuttgart.** 7.0, See **Langenberg.** 9.0, Time, News, Weather, and Sports Notes. 9.25, Rhenish Variety Programme. 10.30, Dance Music, relayed from **London.** 12 **Midnight,** Close Down.

FREDRIKSSTAD.—See **Oslo.**

FREIBURG.—See **Stuttgart.**

GENEVA.—See **Radio-Suisse Romande.**

GENOA.—See **Turin.**

GLEIWITZ.—See **Breslau.**

GOTEBORG.—See **Stockholm.**

GRAZ.—See **Vienna.**

HAMAR.—See **Oslo.**

HAMBURG

Call ha (in Morse); **372 metres;** 1.5 kW. Relayed by **Bremen, 270 metres; Flensburg, 227.4 metres; Hanover, 566 metres;** and **Kiel, 232.2 metres.—3.30 p.m.,** Orchestral Concert by the Symphony Orchestra, conducted by Otto Ebel von Sosen: March, Treuschwur (Rust); Overture, Flotte Bursch (Suppé); Melodies from Bruder Straubinger (Eysler); Waltz, Freudengrüsse (Jos. Strauss); Wochenende in Schlaraffenland (Armandola); Bavarian Ländler, Holdrio (Pell); March, Sporthelden (Mannfred). 4.30, Talk: Culture and Conditions of Life among Primitivo Peoples. 4.55, The True Sea Story of the Week. 5.10, Practice Pieces for Unemployed Actors—III. Kleist: (a) The Prince of Homburg, Act I; (b) Fifteenth Scene of Penthesilea. 5.55, Weather Forecast. 6.0, Dialogue on Australia and the South Seas: Broken Hill, a Model Australian Mine. 6.30, Light Cavalry—Operetta in Three Acts (Suppé). 8.0, See **Langenberg.** 9.30, Time, Weather, News, Sports and Police Notes. 9.50, Topical Talk. 10.0, Dance Music from the Faun-Diele. In an interval at 10.20, Ice Report.

HANOVER.—See **Hamburg.**

HEILSBERG

276.5 metres; 60 kW., and **DANZIG, 453.2 metres.—12.5 p.m.,** Gramophone Concert of Old Regimental Marches. In the interval at 12.20, News. 1.30, Sponsored Programme with Gramophone Records. 2.0, Exchange Rates. 2.30 (from **Danzig**), Programme for Children. 3.0, Concert by the Little Orag Orchestra, conducted by Engen Wileken: March, Ostmarkentreue (Reftberg); Overture, Le Postillon de Longjumeau (Adam); International Dance Suite (Manfred); Selection from Cavalleria rusticana (Mascagni); Tiralla-Walzer (O. Straus); Liebesfeier (Weingartner); Serenade (Moszkovsky); Overture, Das Für-tenkind (Lehar); Waltz, España (Waldteufel); Florentine March (Fucik); Overture, Die Gascogner (Suppé). 4.0 (in an interval), Review of Books. 5.0, Programme Notes for the Coming Week. 5.10, Programme Notes in Esperanto. 5.15, Market Prices. 5.20, Ice Report. 5.30, International Market Report. 5.40, Songs by Othmar Schoeck, sung by Werner Gisivius: Jünger des Weins, Ravenna; Das Ziel; Keine Rast. 5.55, Talk: How many People can the Earth support? 6.25, Review of the Month. 6.55, Weather and News. 7.0, See **Langenberg.** 9.0, Weather, News and Sports Notes. 9.15, See **Langenberg.** 10.30 (from **Danzig**), Dance Music from the Danzig Radio-Redonte. 11.30 (approx.), Close Down.

HILVERSUM

Announced **HUIZEN, 296.1 metres;** 20 kW. (7 kW. up to **4.40 p.m.**).—Programme of the Catholic Radio Society (K.R.O.). **11.55 a.m.,** Orchestral Concert, conducted by Woud. **1.25 p.m.,** Interval. 1.40, Programme for Young People. 2.10, Programme for Children. 3.40, Light Music on Gramophone Records. 4.55, News in Esperanto. 5.10, Concert by the K.R.O. Boys, with M. J. Mossel (Songs): March, Macht Platz der Jugend (Leopoldi); Im Schwarzwald geht ein Mühlenrad (Rust); Du schwarzer Zigeuner (Wacek); Hochzeitsreigen (Lincke); Potpourri, Noteuregen (Urbach); Das war herrlich (Benatzky); A Bedtime Story (Nicholls); I don't want to go to Bed (Lupino). 6.0, Press Review. 6.20, Concert by the K.R.O. Boys (contd.): Ins blaue Leben (Erwin); Einfach fabelhaft (Dostal); Blonde Natascha (Markusch); Georgia on my Mind (Gorrell); March Foxtrot (Wilczynsky). 6.50, Talk. 7.10, Police Notes. 7.25, Sports Notes. 7.40, Concert by the De Geniemaziek Orchestra, the Marcato Children's Symphony Orchestra and a Saxophone Quartet: March, Die Regimentskinder (Fucik); Overture, Le Domino noir (Auber); Waltz, España (Waldteufel); Children's Symphony (Haydn); Ballet Scene (Blériot); Quartet: (a) Pontifical March (Gounod), (b) Minuet (Bolzoni), (c) Londonderry Air (Briegel), (d) Cathedral Echoes (Briegel); Light Music on Gramophone Records; Orchestra: Erratic Rhythm (Tackay). (b) Just a Dancing Sweetheart (Rose-Solman), (c) Hungarian Dance (Hager), (d) Habanera (Chwatl); Children's Orchestra: (a) Ständchen (Haydn), (b) March from Judas Maccabaeus (Handel); The Geniemusiek Orchestra: (a) Marche tzigane (Popy), (b) La Manuela Eilenberg), (c) Selection from Der Freischütz (Weber), (d) The Skaters (Waldteufel), (e) March, Sambre et Meuse (Ransky); March (Erp). In an interval at 8.20 (approx.), News. 10.10, Light Music on Gramophone Records. 10.40 (in an interval), News.

HORBY.—See **Stockholm.**

HUIZEN

Announced **HILVERSUM; 1,875 metres;** 8.5 kW.—**11.40 a.m.** till Close Down, Programme of the Workers' Radio Society (V.A.R.A.). **11.40 a.m.,** Concert by the Little V.A.R.A. Orchestra, conducted by P. Duchant. 1.55, Light Music on Gramophone Records. 3.0, Concert by the V.A.R.A. Mandoline Orchestra, conducted by J. B. Kok. Polonaise (Pini); Two Pieces (Mendelssohn); Gramophone Records; La Lettre de Manon (Gillet); Estudiantina (Waldteufel); Gramophone Records; The Isle of Golden Dreams (Blaufuss); Nobody's Sweetheart (Kahn); Fortuna (Siede). 3.40, Talk. 4.0, Concert, conducted by P. Tiggers. 4.40, Concert by the V.A.R.A. Children's Choir, conducted by Mlle. Leida Hulscher. Gramophone Records in the intervals. 5.20, Literary Talk. 5.40, Frisian Programme. 6.40, Talk. 7.10, Darum lacht Mona Lisa—Operetta Miniature (Vries). 7.25, S.O.S. Messages. 7.30, Variety Programme by De Fliegelhiters, conducted by Hugo de Groot: The Village Barber, E. Philipse (Songs), A. de Booy (Songs), the Van Toorn Brothers (Accordion Trio), J. Jong (Organ), A. de Vries (Recitations), and L. Davids. 10.40, News Bulletin. 10.50, Popular Music on Gramophone Records. 11.40 (approx.), Close Down.

INNSBRUCK.—See **Vienna.**

KALUNDBORG.—See **Copenhagen.**

KAUNAS

1,935 metres; 7 kW.—**5.40 p.m.,** Variety Programme. 6.0, Time, Weather and News. 6.30, Concert. 7.10, Talk: South-Eastern Lithuania. 7.30, Dance Music. 8.30, Sports Notes. 8.40, Concert. 9.30 (approx.), Close Down.

KIEL.—See **Hamburg.**

KLAGENFURT.—See **Vienna.**

KOSICE.—See **Prague.**

LAHTI

1,796 metres; 40 kW.; and **HELSINKI, 368.1 metres.—5.40 p.m.,** Orchestral Concert. 6.15, Talk. 6.40, Dance Music. 7.0, Song Recital by Oiva Taimi. 7.15, Dance Music (contd.). 7.45, News in Finnish and Swedish. 8.15, Dance Music relayed from the Grand Restaurant. 10.0 (approx.). Close Down.

LANGENBERG

473 metres; 60 kW.—**12 Noon,** Concert, conducted by Wolf: Festival March from The Queen of Sheba (Gounod); Waltz, Les fleurs (Waldteufel); Overture, The Merry Wives of Windsor (Nicolai); International Suite (Tchaikovsky); Weber Potpourri (Urbach); Old and New Waltzes (Robrecht); Selection from The Circus Princess (Kálmán); March, Deutschlands Heldensöhne (Dirksen). In the interval at 1.0 p.m., News. 1.35, Popular Music on Gramophone Records. 2.30, Economic Notes and Time. 2.50, The Sleeping Beauty—A Musical Fairy Play for Children. 3.10, Talk: Beasts and Birds of Prey in Winter. 3.30, English Reading. 4.0, Vienna and the Waltz—Concert by Kläre Hansen (Soprano), Leonardo Aramesco (Tenor), and the West German Chamber Orchestra, conducted by Spitz. 5.20, Talk: Women who have mastered their Fate. 5.45, Weather, Time, Economic Notes, and Sports Report. 6.0, Talk: German Landscape and German Art. 6.20, Recitations. 6.30, Talk: Manual Workers in Factories. 6.55, News. 7.0, A Hundred and Eleven Years of Carnival—Concert by a Wind Instrument Orchestra, conducted by Hermann Schmidt. Prof. Wilh. Schneider-Clauss, Willi Ostermann, Gerhard Ebeler, August Batzem, Alfred Heinen, Karl Küppers, Jean Schlösser, and Mathieu Rang. 9.0, News and Sports Results. 9.15, Relay of the Carnival Assembly of the Düsseldorf Carnival Society from the Tonhalle, Düsseldorf. 10.30, Dance Music relayed from **London.** 12 **Midnight,** Close Down.

LAUSANNE.—See **Radio-Suisse Romande.**

LEIPZIG

389.6 metres; 120 kW.; and **DRESDEN, 319 metres.—12.15 p.m.,** Gramophone Concert, Edith Lorand and her Hungarian Orchestra: (a) Hungarian Song,Flowers for Whitsun (Kokay), b) The Turtle Dove (Kondor), (c) Grüne Fenster im kleinen Haus; Eric Harden and his Dance Band: (a) Waltz, Neapolitan Nights (Zamecnik), (b) Midnight Waltz (Amadio); Ideon Parade; Overture, Gipsy Love (Lehár); Edith Lorand and her Orchestra: Vivat Hungaria (Kálmán); Four Airs from Marion das gehört sich nicht (Stransky); The Kristall Orchestra: With Song and Wine (Armandola); Theo Braun (Xylophone): (a) The Match Parade (Wehle), (b) Song of Happiness (Nicholls); Frank Saudler's Orchestra: Vibraphone Waltz (Löhr), followed by Exchange Quotations. 1.0, Wireless Notes. 1.30, Programme for Children. 2.15, Chess Lesson. 2.45, Economic Notes. 3.0 **to** 3.15, Music Notes. 3.30, See **Berlin (Witzleben).** 5.0, Legal Talk. 5.30, German for Germans. 5.50, A Modern Dictionary. 6.0, Talk: The Centenary of Count von Schlieffen. 6.20, Brahms Recital by Prof. Walter Rehberg. Sonata in F Minor, Op. 5; Intermezzo in E Flat Minor, Op. 118; Ballade in G Minor, Op. 118. 7.0, Programme from **Langenberg,** followed by Dance Music. 11.0 (approx.), Close Down.

LINZ.—See **Vienna.**

LJUBLJANA

574.7 metres; 2.5 kW.—**4.30 p.m.,** Quintet Concert. 5.30, English Lesson. 6.0, Talk on Sociology. 6.30, Talk: The History of Philosophy. 7.0, Orchestral Concert. 8.0, Recital of Songs. 8.30, Quintet Concert. 9.0, Time, News, and Programme of Light Music.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—**7.0 p.m.,** Concert: Mon rêve (Waldteufel); Melody (Ziehrer); Tango della gelosia (Mascheroni); Canto vagabondo (Simonetti); Selection from The Tales of Hoffmann (Offenbach); La bonne Auberge (Jabonne). 7.30, Radio Gazette for Lyons and the South-East. 8.30, International Gala Concert, relayed from the Salle Rameau. News after the Programme.

MADRID

ARANJUEZ (EAQ); 30.43 metres; 20 kW.—**6.0 to 8.0 p.m.,** Programme for Listeners in Europe, the Canary Islands, Guinea, and America. 6.0, Concert of Popular Music. 7.15, Talk. 7.30, Dance Music. 8.0 **to** 10.30, Interval. 10.30, Variety Concert. 10.45, Radio Chronicle. 11.0, Variety Concert (contd.). 11.35, Talk. 11.40, Light Music. 12 **Midnight** (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 424.3 metres; 2 kW.—**7.0 p.m.,** Chimes, Exchange and Request Gramophone Records. 7.30 (in the interval), Talk on the Co-operative Movement. 8.15, News Bulletin. 8.30 **to** 9.0, Interval. 9.0, English Lesson by the Linguaphone Method. 9.30, Chimes, Time and Transmission of a Musical Comedy. 11.45, News Bulletin. 12 **Midnight,** Chimes and Close Down.

MALMO.—See **Stockholm.**

MILAN.—See **Turin.**

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—**3.10 p.m.,** See **Bratislava.** 4.10, See **Prague.** 4.50, See **Brno.** 5.0, Talk. 5.15, See **Prague.** 5.25, Brass Band Concert by Unemployed Musicians; Conductor, V. Cerny. 6.0, See **Prague.** 6.25, See **Bratislava.** 8.30, See **Prague.** 10.30 (approx.), Close Down.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—**4.0 p.m.,** News. 4.10, Announcements. 4.30, Literary Programme. 5.30, Concert from the Conservatoire. 8.0, Review of the Week and Answers to Correspondents in French. 8.55, Time. 9.5, Press Review.

MOTALA.—See **Stockholm.**

MUHLACKER.—See **Stuttgart.**

MUNICH

533 metres; 60 kW. Relayed by **Augsburg** and **Kaiserslautern, 560 metres;** and **Nürnberg, 239 metres.—4.0 p.m.,** Orchestral Concert, conducted by Erich Kloss: Overture, William Tell (Rossini); Twilight and Butterfly Waltz (Friml); Selection from Faust (Gounod); Gavotte Caprice (Bortkiewicz); Waltz, Weana Madln (Ziehrer); Forest Idylls (Mac Dowell); Ballet Suite (Popy). 5.5, Programme for Young People. 5.50, Liebeslieder-Walzer, Op. 52 (Brahms), for Four Solo Voices and Pianoforte Duet. 6.25, Wireless Hints. 6.40, Talk on Wireless. 7.0, Bunter Abend from **Langenberg.** 9.20, Time, Weather, News, and Sports Notes. 9.45, Dance Music on Gramophone Records. 10.30, Concert from **London.** 12 **Midnight** (approx.), Close Down.

NAPLES.—See **Rome.**

NOTODDEN.—See **Oslo.**

OSLO

1,083 metres; 60 kW. Relayed by **Fredrikstad, 365.8 metres; Hamar, 574.7 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres;** and **Rjukan, 447.1 metres.—3.30 p.m.,** Gramophone Concert of Light Music. 4.15, Programme for Children. 5.15, Norwegian Music—Songs and Hardanger Fiddle Solos. 5.45, Talk on Economics. 6.0, Announcements, Weather, and News. 6.30, Agricultural Talk, relayed from **Bodö (453.2 metres).** 7.0, Time. 7.1, Talk, Music, and Songs for Choir, relayed from **Skien.** 8.40, Weather and News. 9.0, Topical Talk. 9.15, Dance Music and Popular Airs by the Station Orchestra, conducted by H. Kramm. 10.0, Dance Music on Gramophone Records.

OSTERSUND.—See **Stockholm.**

PALERMO

542 metres; 3 kW.—**7.0 p.m.,** Dopolavoro Notes, Tourist Talk, Agricultural Report, and Giornale Radio. 7.20, Sports Talk. 7.30, Time Signal and Announcements. 7.35, Popular Music on Gramophone Records. 7.45, Rossini—Operetta in Three Acts (Bellini). 9.55, News Bulletin.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW.—Time Signals (on 2,650 metres) at **9.26 a.m.** and **10.26 p.m.,** and 6-dot Signals. **5.45 p.m.,** Le Journal Parlé. 7.30, The Marriage of Figaro—Play (Beaumarchais), with Music by Mozart. 9.0 (approx.), Close Down.

PARIS

POSTE PARISIEN; 328.2 metres; 60 kW.—**6.45 p.m.,** Le Journal Parlé. 7.0, Gramophone Concert of Light Music. 8.0, Talk: The Event of the Week. 8.5, Theatre Notes. 8.15, Interval. 8.30, Concert of Chamber Music. 9.0, Interval. 9.10, Concert of Dance Music by the Sonora Orchestra, conducted by Fred Hoffmann. 11.0, Dance Music on Gramophone Records. 12 **Midnight** (approx.), Close Down.

PARIS

RADIO PARIS; Call CFR; 1,725 metres; 75 kW.—**6.45 a.m.,** Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Probable Relay of the Test Match from Australia. 8.0, Press Review and Weather Forecast. 8.30, Test Match Relay (contd.). 9.0, Concert by the Conservatoire Concert Society, relayed from the Old Conservatoire. **11.30 to 12 Noon,** Interval. 12.0, Concert by the Radio Orchestra: Suite, Merrie England (German); Scenes pyrenennes (Chauvet); Two South American Sketches (Bourguinon); Ombre sur le Nil (Schimelli); Dramatic Legend (Travglia); Air from Un Dimanche Basque (Laparra-Grecourt); African Suite, Au Soleil (Lacôme); London Sketches (Casadesus); Tales from the Vienna Woods (Joh. Strauss); St. Granier Potpourri. In the intervals at 1.0 p.m., Exchange, News, and Weather; and at 1.30, Exchange. 2.0, Exchange. 3.0, Programme for Children. 3.45, Exchange and Market Prices. 5.50, Concert by the Station Orchestra: Nuits de Blida (Nelly and Berniaux); Ange d'amour (Waldteufel); Selection from Die Fledermaus (Strauss-Kochmann); Marlene (Michaelov); Vers Abbazia (Porges and Rollins); Tout Paris (Waldteufel); Alma Espagnola (Bardetas); This must be Love (Brown); Au Ciel d'Hawai (Michaelov); Dance, Little Lady (Coward); Nostalgie d'amour (Antoli). 6.30, Market Prices, Weather Report, and Agricultural Notes. 7.0, Talk on Science. 7.20, Agricultural Talk. 7.45, Latin Press Review. 8.0, Songs of Yesterday and Today. 8.30, News, Weather, and Sports Notes. 8.40, Review by Jean Rieux. 8.45, Poems of the Sea (collected by François Coppée); Readings from Victor Hugo, Verlaine, Gautier, and others. In the interval at 9.15, Press Review and News. 10.0, Gramophone Concert: Suite, La Mer (Debussy); Three Airs (Hayet): (a) Les Pecheurs de Groix, (b) Valparaiso, (c) Le Port de Morlais.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA); 308 metres; 25 kW. Relayed by **W8XK** on **48.96 metres** and **25.27 metres.—9.0 p.m.,** Dance Masters, from **New York.** 9.30, Concert Favourites, from **New York.** 10.0, Rhythmic Interlude. 10.30, Weather Report. 10.32, Behind the Law—Tales of the Pennsylvania State Police. 10.45, Little Orphan Annie, from **New York.** 11.0, Little German Band. 11.30, Time Signal. 11.31, Temperature Report. 11.32, Teaberry Sport Review. 11.37, Press News Reeler. 11.42, Strange Facts. 11.44, Weather Report. 11.45, A Recreo—by Bill and Alex, of the Downtown Y.M.C.A. **12 Midnight,** Time Signal, and Fields and Hall, from **New York. 12.15 a.m. (Sunday),** Atkinson String Ensemble. 12.30, Programme to be Announced. 12.45 to 4.0, **New York** Relay. 12.45, Westinghouse Programme. 1.0, American Taxpayers' League. 1.15, The Boston Symphony Orchestra. 3.15, Salon Singers. 3.30, Cuckoos. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.13, KDKA Artist Bulletin. 4.15, Press Last Minute News. 4.20, Messages to Methodist Missionaries. 5.20, Messages to Dwellers in the Far North.

PORSGRUND.—See **Oslo.**

PRAGUE

488.6 metres; 120 kW.—**3.10 p.m.,** See **Bratislava.** 4.10, Talk on Economics. 4.20, Czech Lesson for Germans and German Lesson for Czechs. 4.50, Popular Music on Gramophone Records. 5.5, Agricultural Report. 5.15, Talk for Workers. 5.25, News in German. 5.30, German Transmission: Programme for Children. 6.0, Chimes from the Church of St. Loudmila, Kralovské-Vinohrady. 6.0, News. 6.25, See **Bratislava.** In the interval at 8.0, Time Signal. 8.30, Running Commentary on the International Ice Hockey Championships relayed from the Winter Stadium. 9.0, Time and News Bulletin. 9.15, Running Commentary from the Winter Stadium (contd.). 9.45, Popular Music on Gramophone Records. 10.30 (approx.), Close Down.

RABAT

416 metres; 6 kW.—**12.30 to 2.0 p.m.,** Concert of Light Music. 3.30, Programme for Schools: Les Cigalettes (Filipucci); Recitation: Le petit soldat de plomb (Klingsor); Songs; Physical Exercises; Selection from Les Saltimbanques (Ganne). 4.0, Popular Music on Gramophone Records. 5.0 to 7.0, Interval. 7.0, Arab Transmission: News and Announcements. 7.45, Le Journal Parlé. Weather and News. 8.0, Concert: Selection from Die Fledermaus (Joh. Strauss-Tavan); Song, O Margarita (Grete); Selection from Tip Toes (Gershwin-Salabert); Song, Hawaiian Souvenir (Mauprey); Selection from La Roussotte (Lecocq-Tavan); Song, Je regardais en l'air from Les Cloches de Corneville (Planquette); Selection from Monsieur Beaucaire (Messager-Salabert). 9.0, Popular Music on Gramophone Records.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; **LAUSANNE, 680 metres;** and **GENEVA, 760 metres.—6.0 p.m.** (from **Lausanne**), Weather and News. 6.30, Talk on Films. 7.0 (from **Lausanne**), Tosca—Opera in Three Acts (Puccini) on Gramophone Records. 9.0, News and Weather. 9.10 (from **Geneva**), Talk: The Work of the League of Nations. 9.20 (from **Geneva**), Dance Music by the Broadcasting Serenaders. 10.30 (approx.), Close Down.

REYKJAVIK

1,200 metres; 21 kW.—**8.30 p.m.,** Weather Report. 8.40, Musical Programme and Announcements. 9.0, Chimes. 9.2, News Bulletin. 9.30, Reading. 10.0, Concert by the Station Quartet, followed by Choral Music on Gramophone Records. After the Programme, Dance Music. **1.0 a.m. (Sunday)** (approx.), Close Down.

RIGA

525 metres; 15 kW.—**4.30 p.m.,** Organ Recital by Haralds Kreicburgs: Toccata No. 4 (Späht); Allegro (Guilmant); Sonata No. 6 (Mendelssohn); Choral. 5.0, Talk. 5.30, French Lesson. 5.58, Weather Report. 6.0, Light Music. 6.30, Dramatic Programme. 7.0, News. 7.20, Dramatic Programme (contd.). 8.0, Weather and News. 8.30, Dance Music. 10.0 (approx.), Close Down.

RJUKAN.—See **Oslo.**

ROME

Call 1RO, 441 metres; 50 kW. Relayed by **Naples, 319 metres;** and **2RO, 25.4 metres.—7.0 a.m.,** Gymnastics. **7.15 to 7.30 a.m.,** Giornale Radio and Announcements. 11.30, Weather and Light Music on Gramophone Records. **12 Noon,** Time and Announcements. **12.2 to 1.15 p.m.,** Orchestral Concert: Presentation (Escobar); Waltz (Carducci); Selection from Wonder Bar (Katscher); Hawaiian Guitar (Restano); Atlantis (Robrecht); Duet, Querine serrano (Filiberto); Dance of the Waves from Loreley (Catalani); Tamburino arabo (Ranzato); Spanish Song (Valdez); Oh Granada (Ricciardi). 3.45, Children's Radio Review, Talk for Girls. 4.0, Exchange, Announcements, Report of the Royal Geographical Society and Giornale Radio. 4.15, Reading. 4.30 to 5.15, Orchestral Concert: Overture, Il Seraglio (Mozart); Potpourri of Dances, Rheinfrenden (Strasser); Selection from Gianni Schicchi (Puccini); Grotesque Waltz (Bortkiewicz); Melody (Lohr); Carillon (De Sena); Harlequin (Bartlett); Delilah (Dax). **6.0 (Naples),** Shipping and Sports Notes. 6.10, Lesson in Morse. 6.20, Giornale Radio and Agricultural Notes. 7.0, Time, Announcements, and Light Music on Gramophone Records. 7.30, Sports Notes, Tourist Report, and Announcements. 7.45, Relay of an Opera. In the intervals: Review of Books, Talk on Stockholm (the Venice of the North), and News Bulletin.

SALZBURG.—See **Vienna.**

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY); 379.5 metres; 50 kW. Relayed at intervals by **W2XAF** on **31.48 metres,** and by **W2XAD** on **19.56 metres.—12 Midnight,** Soloist, from **New York. 12.15 a.m. (Sunday),** Stock Reports. 12.30, Hotel New Yorker Orchestra, from **New York.** 12.45, James G. McDonald: The World To-day, from **New York.** 1.0, Lady Fingers (Pianists). 1.15, Bernard Silberg (Cellist). 1.30 to 3.0, **New York** Relay. 1.30, National Advisory Council. 2.0, The Golden Thread. 2.30, Oldsmobile Programme—George Olsen's Orchestra. 3.0, Lucky Strike Hour, from **New York,** followed by Programme Resumé.

SCHWEIZERISCHER LANDESSENDER

BEROMUNSTER, 459 metres; 60 kW.; **BASLE, 244.1 metres;** and **BERNE, 245.9 metres.—9.20 a.m.** (from **Zürich**), Programme for Schools. 9.50, Interval. 11.28, Time Signal from Neuchâtel Observatory. 11.30, Weather and News. 11.30, Variety Programme on Gramophone Records. 12.45 p.m. (from **Basle**), Wireless Hints. 1.0 (from **Basle**), Book Review. 1.30, Choral Concert on Gramophone Records. 2.0 (from **Basle**), Talk: The Civil Service in Switzerland. 2.30 (from **Basle**), Talk for Stamp Collectors: The New European Stamp Issues for 1932. 3.0 (from **Basle**), Concert by the Florenzia Mandoline Society. 3.40 (from **Basle**), Traffic Report. 4.0 (from **Basle**), Concert by a Drum and Fife Band. 4.30, Weather. 4.35, Interval. 5.30 (from **Basle**), Medical Talk. 6.0 (from **Zürich**), Chimes from Zürich Churches, Time, Weather and Market Prices. 6.15 (from **Basle**), Talk on the Far East. 6.45 (from **Basle**), Introduction to the following Relay. 7.0 (from **Basle**), Symphony Concert by the Basle Music Society, conducted by Dr. Felix Weingartner. Soloist: Maria Nemeth (Soprano). 9.0, Weather and News. 9.10, Dance Music on Gramophone Records. 10.0 (approx.), Close Down.

SOTTENS.—See **Radio-Suisse Romande.**

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by **Boden, 1,229.5 metres; Göteborg, 322 metres; Horby, 257 metres; Motala, 1,348 metres; Östersund, 770 metres;** and **Sundsvall, 542 metres.—3.0 p.m.,** Orchestral Concert: Overture, Maritana (Wallace); Waltz, Die Schönen von Valencia (Morena); Potpourri, From Near and Far (Löfgren); Tango, Kleine Elisabeth (Rosen); Selection from Clo-Clo (Lehar). 4.5, Reading. 4.30, Light Music on Gramophone Records. 5.30, Cabaret Programme. 6.15, Weather and News. 6.30, Talk: The Russian Empire. 7.0 (from **Göteborg**), Old Dance Music. 8.45, Weather and News. 9.0, Modern Dance Music. 11.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—**11.30 a.m.,** Orchestral Concert, conducted by Maurice de Villers. Overture, Der Freischütz (Weber); Ballet Music from The Cid (Massenet); Three Norwegian Dances (Grieg); Selection from Carmen (Bizet); Bacchanal from Samson and Delilah (Saint-Saëns); Small Orchestral Suite (Pierné); Greek March (Ganne). **12.45 p.m.,** News. 1.0, Time and Exchange. 1.5, Offenbach Concert on Gramophone Records. 2.0, Gramophone Concert of Dance Music. **3.0 to 3.45,** Interval. 3.45, Talk on Chopin. 4.0, Light Music on Gramophone Records. 4.45, Answers to Legal Questions in German. 5.0, Pasdeloup Symphony Concert, relayed from the Théâtre des Champs-Elysées, Paris. 7.0, Talk in German on Gardening. 7.15, Light Music on Gramophone Records. 7.30, Time and News. 7.45, Lottery Results. 8.0, Concert of Music by Lucien Chevaillier, M. Pogoda (Pianoforte), Jean Hazart (Songs), and M. Grégoire (Violin). Pianoforte Solo: Sonata gaie; Song, Incantation; First Sonata in D—L'enfant for Violin and Pianoforte; Songs: (a) Légende, (b) Noël; Violin and Pianoforte: Foxtrot, Tango and Finale; Extracts from The Musical Sketch. 9.0, Plan-quette Programme: Le Chevalier Gaston—Opéra-Comique in One Act; Le Fiancé de Margot—One-Act Operetta. 10.30, Dance Music from the Savoy. **12 Midnight** (approx.) Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and **FREIBURG, 570 metres.—11.20 a.m.,** Song Recital by Else Sihler. 11.50, Folk Music by the Stuttgart Trio. **12.30 p.m.,** Concert from **Langenberg.** 1.30, Time, Weather, News, and Programme Announcements. 1.45, Swabian Anecdotes. 2.0, Choral Concert, relayed from **Schramberg:** Folk Song, Kränzelkraut (arr. Othegraven); Dance Song, Mädel flink auf (Doebert); Der Kakadu (R. Trunk); Folk Song, Der Besenbinder (arr. Othegraven); Marching Song, Wenn die Garde marschiert (Raymond); Folk Song, Pappelmäulchen (Wohlgemuth); Die schone Wirtin vom goldenen Stern (Krome); Schramberg Entry March and Fools' March; Chinese March (Decker). 2.30, See **Frankfurt.** 3.30, Dance Music on Gramophone Records. 4.0, See **Munich.** 5.15, Time and Sports Notes. 5.25 (from **Karsruhe**), Engineering Talk: Motor Cars. 5.50, Talk on Bespoke Tailoring. 6.15, Time, News, Weather, and Snow Report. 6.30, Concert by the Melodiaten, relayed from **Pforzheim:** The Match Parade (Wehle); Slow Foxtrot, Träum' mein kleines Baby (Meisel); Waltz, Nur um dich zu lieben (Stransky); Foxtrot, Flüstern in der Nacht (Süsse); Tango, Mach mir's nicht so schwer (Stransky); Baby, wo ist mein Baby? (Hollander); Foxtrot (Gay). 7.0, See **Langenberg.** 9.0, Time, Weather, News, and Programme Announcements. 9.15, Sports Report from the Town Hall (on Gramophone Records). 9.40, Carnival Assembly, relayed from **Langenberg.** 10.30, Dance Music by Ambrose and his Band, relayed from **London. 12 Midnight** (approx.), Close Down.

SUNDSVALL.—See **Stockholm.**

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—**6.15 p.m.,** Military Music. 6.30, Opera Music: Selection from Penelope (Puccini); Manon (Massenet) and La Bohème (Puccini). 6.45, Concerto in C Minor for Harp and Orchestra (Renie). 7.0, Music by an Argentine Orchestra. 7.15, News and Horse Racing Results. 7.30, Light Music. 8.0, Concert: Sa voix tonne comme la foudre, from Hérodiade (Massenet); Melody from The Huguenots (Meyerbeer); Miserere from Il Trovatore (Verdi); Melody from Masaniello (Auber); Melody (Manfred); Wedding Waltz (Lincke); Clair de lune (Ketelbey). 8.45, Accordion Solos. 9.0, Orchestral Selection from Mignon (Thomas), followed by Light Music. 10.0, Sound Film Music. 10.15, North African News. 10.30, Concert for Listeners in Morocco: Slav Fantasia in B Minor (Dvorák); Melody from Véronique (Messager); Rhapsody, España (Chabrier); Tout le pays l'a su (Borel Clerc); Melody from Viktoria and her Hussar (Abraham). 11.0, Light Music. **11.30 to 12.0 Midnight,** Programme arranged by the International Broadcasting Company of London, Mr. H. K. Hitchcock announcing The I.B.C. Half Hour. Selection, Paramount on Parade; Mountain Refrain; Laughs and Yodels; Louisa from Pisa; The Voice in the old Village Choir; Apple Blossom Time; The Coster's Wedding; Selection, Say it with Songs. 11.57, I.B.C. Good-night Melody. **12 Midnight,** Weather and Announcements. **12.5 a.m. (Sunday),** Light Music. 12.15, Soloist Music. 12.30 (approx.), Close Down.

TRIESTE

247.7 metres; 10 kW.—**4.0 to 6.35 p.m.,** See **Turin.** 6.35, Concert of Music by Vitezslav Novak, with Commentary. Twilight—Four Pieces, Op. 13: Winter Night Songs, Op. 30: (a) Song of a Moonlight Night, (b) Song of a Stormy Night, (c) Song of Christmas Eve, (d) Song of a Night of Carnival. 7.0 till Close Down, See **Turin.**

TRONDHEIM.—See **Oslo.**

TURIN

273.7 metres; 7 kW. Relayed by **Milan, 331.5 metres; Genoa, 312.8 metres;** and **Florence, 500.8 metres.—6.0 p.m.,** Gramophone Records of Variety Music. 6.20, Giornale Radio. 6.30, Time, Announcements, Tourist Report and Gramophone Records (contd.). 7.0, Giornale Radio, Weather and Light Music on Gramophone Records. 7.30, Talk: Events and Problems. 7.45, Variety Programme. In the interval: Review of New Books. 10.0, Giornale Radio.

VATICAN CITY

19.84 metres (Morning), and **50.26 metres (Evening);** 10 kW.—**10.0 to 10.15 a.m.,** Religious Announcements in Different Languages. **7.0 to 7.15 p.m.,** Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by **Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 245.9 metres;** and **Salzburg, 218.5 metres.—4.0 p.m.,** Talk: Carnival in Old Vienna. 4.30, Concert by the Julius Herrmann Orchestra and the Vienna Male Voice Quartet: Overture, Der Göttergatte (Lehár); Waltz, Sphärenklänge (Jos. Strauss); Treue (Keldorfer); Auf der Alm, da gibt's ka Sünd' (Sompek); Ist dein kleins Herzchen mir treu? (Eisele-Flinak); Quartet: Wir suchen eine Frau (Flinak); Selection from The Geisha (Jones); Madame, Sie sind mir nicht einerlei (Gotwy); My golden Baby (Abraham); Ein Lied, ein Kuss, ein Mädel (Stolz); Mei Deanderi (Werner-Weiss); Es ist so wunderschön aufm Steh'n (Krausz); Selection from Der lachende Ehemann (Eysler); St. Louis March (Komzak). 5.45, Talk: How to educate young People to become Useful Citizens. 6.10, A Maxim. 6.15, Time, Weather, Sports Notes, and Programme Announcements. 6.25, Song Recital by Caruso on Gramophone Records: The Flower Song from Carmen (Bizet); Arias from (a) Aida (Verdi), (b) The Pearl Fishers (Bizet); Nina (Pergolesi); La danza (Rossini); Le campane di San Guisto (Arona); Vieni sul mar. 7.0, Reading from the Works of Heinrich Eduard Jakob. 7.30, Die tolle Therese—Operetta in Two Acts (Otto Römisch) on Themes by Joh. Strauss, Sen. In an interval at 8.30 (approx.), News, Weather, and Announcements. 9.30, Dance Music by Jean Litwin's Syncopators and the Los Pamperos Tango Band, relayed from the Café de Paris.

WARSAW

1,411 metres; 120 kW.—**11.10 a.m.,** Light Music on Gramophone Records. **12.10 p.m.,** Weather Forecast. 12.15, Educational Programme from **Lwow (381 metres).** 1.0, Programme for Soldiers. 1.40 to 2.10, Interval. 2.10, Announcements. 2.15, Economic Notes. 2.25, Military Information. 2.35, Programme for Children. 3.0, Light Music on Gramophone Records. 3.20, Talk on History: The Roman Empire, relayed from **Wilno (563 metres).** 3.40, Talk on the Russo-Polish War —the Anniversary of the Battle of Grochov in 1831. 4.0, Programme for Hospitals, relayed from **Lwow.** 4.30, Announcements. 4.40, Topical Talk. 4.55, Programme Announcements. 5.0, Talk on Polish Literature. 5.20, Topical News. 5.25, Light Music from the Café Italia. 6.0, Miscellaneous Items. 6.20, Gardening Talk. 6.30, Topical Talk. 6.45, Radio Journal. 7.0, Carnival Concert of Dance Music. The Station Orchestra, conducted by S. Nawrot. Soloists: Aston (Songs), Zynski and Elen (Two Pianofortes), and Olesinski (Accordion). Polonaise (Oginski-Lefeld); Waltz, Night of Love (Karasinski); Foxtrot, Mona Lisa (Sullivan); Tango, Two Windows (Dan); English Waltz (Wichler); Oberkis (Namyslowski); Gavotte from Lysistrata (Lincke); Minuet (Boccherini); Cracoviennes (Rajczac); Rumba, Tanganilla (Bazant); Slow Foxtrot (Dan); Polka, Pasodoble (Alfonso); Cracoviennes (Zynski-Ellen); Cossack Dance (Ballerian); Quadrille from Die Fledermaus (Strauss); Waltz, The Blue Danube (Strauss); Blues from Der Orlov (Granichstaedten); Tarantella (Solazzi); Polka, Mazurka (Namyslowski); Polish Radio March (Rajecki). In the intervals, Sports Notes and Radio Journal. 9.5, Chopin Pianoforte Recital by Imre Ungar. 9.40, Reading. 9.55, Aviation Weather Report and Police Notes. 10.0, Dance Music from the Bodega Dance Hall. In the interval, News for Members of the Polish Polar Expedition.

WILNO

563 metres; 16 kW.—**6.10 p.m.,** Miscellaneous Items. 6.15, Talk: The Economic Crisis in France. 6.30, See **Warsaw.** 7.0, Request Gramophone Records. 8.0, Song Recital by Mme. Olgina (Soprano). 8.30, Light Orchestral Concert, relayed from **Warsaw.** 9.5, See **Warsaw.** 11.0 (approx.), Close Down.

ZAGREB

307 metres; 0.75 kW.—**4.0 p.m.,** Orchestral Concert. 5.30 to 6.30, Interval. 6.30, Announcements. 6.50, Introductory Talk to the following Transmission. 7.0, Relay of an Opera from the National Theatre. In the interval, News, Weather and Snow Report. 10.0 (approx.), Close Down.

ZURICH.—See **Schweizerischer Landessender.**

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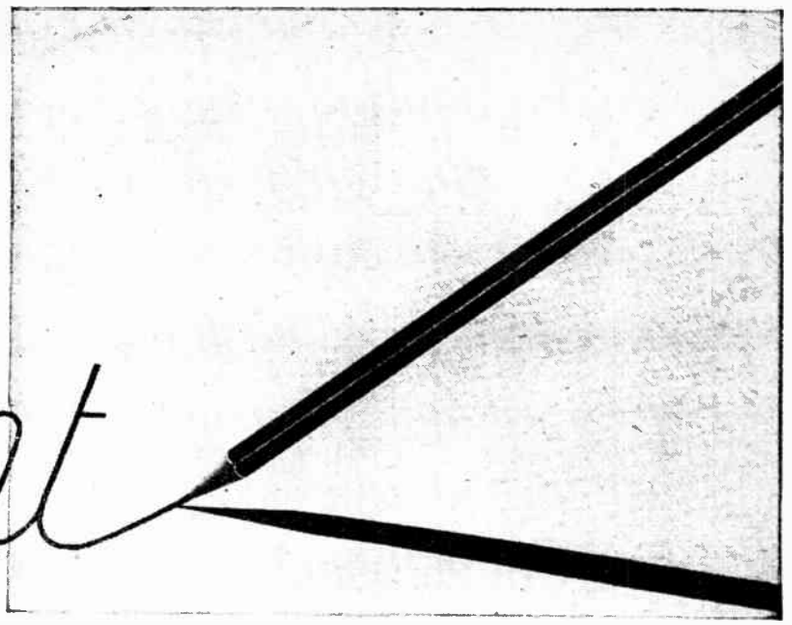

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The Wireless World

THE PRACTICAL RADIO JOURNAL

with

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Friday, February 24th, 1933.

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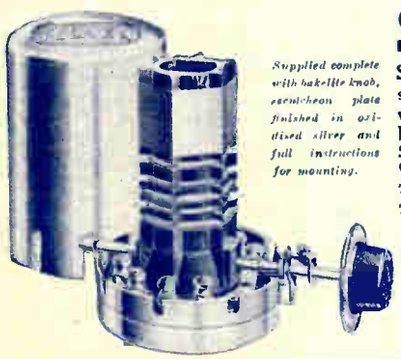

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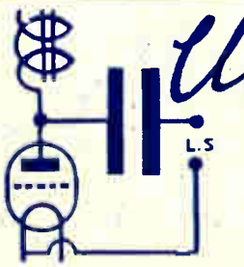

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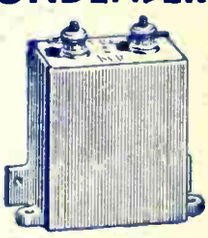

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ATWATER KENT

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SOLVED FADING

In "The Wireless World" dated Feb. 10th the following Editorial Comment on the subject of Fading appeared under the heading FOREIGN STATIONS:—

"In forming opinions on this question let us be careful to remember that fading can now be practically overcome with automatic volume control."

All Atwater Kent Receivers are fitted with this necessary feature, as we long ago realised that to receive Foreign Stations satisfactorily its use was essential.

Has your set Automatic Volume Control?

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The above, combined with more than adequate selectivity (9-10 k.c.) and a range which is only limited by atmospheric conditions, definitely puts Atwater Kent beyond comparison.

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Three point Tone Switch.
Large Mains Energised M.C Loud Speaker.
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The Wireless World

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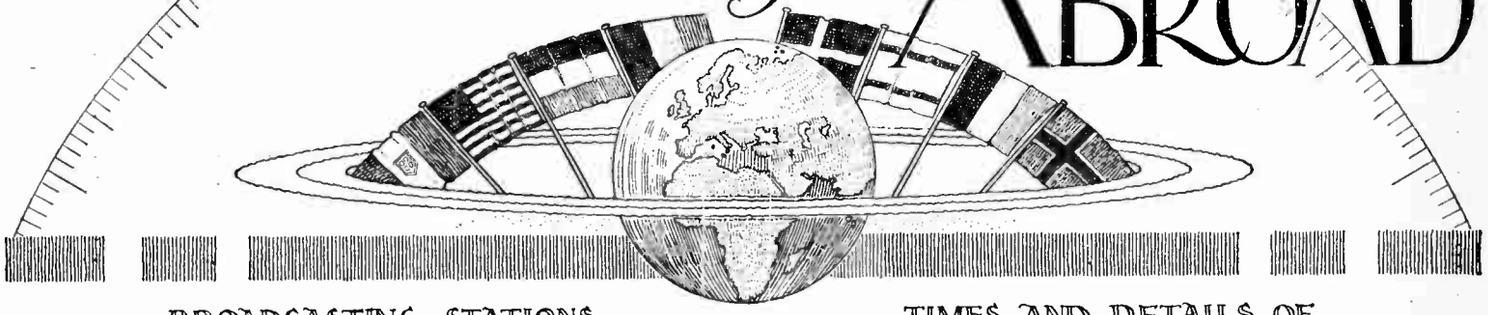

BROADCASTING STATIONS ARRANGED IN ORDER OF WAVELENGTH

TIMES AND DETAILS OF FULL WEEK'S FOREIGN TRANSMISSIONS

Metres.	Kc.	kW.	Station.	Tuning Positions.
1935	155	7	Kaunas (Kovno) (Lithuania)	
1875	160	8.5	Hilversum (Holland)	
1796	167	40	Lahti (Finland)	
1725	174	75	Radio Paris, C.F.R.	
1635	183.5	60	Zeesen (Königswusterhausen) (Germany). (*S.-W. Stn. DJA on* 31.38 *m.*)	
1554.4	193	30	Daventry National	
1538	195	7	Ankara (Angora) (Turkey)	
1481	202.5	100	Moscow, RV1 (Old Komintern) (Russia)	
1446	207.5	13	Eiffel Tower, FL, Paris	
1412	212.5	120	Warsaw 1 (Poland)	
1380	217.5	100	Novosibirsk, RV6 (Russia)	
1348	222.5	30	Motala (Sweden). (*Relays Stockholm*)	
1304	230	100	Moscow, WZSPS (Trade Union) (Russia)	
1275	235	0.5	Tunis-Kasbah (Tunisia)	
1230	244	0.6	Boden (Sweden). (*Relays Stockholm*)	
1200	250	5	Stamboul (Turkey)	
1200	250	21	Reykjavik (Iceland)	
1170	256	25	Tashkent, RV11 (Russia)	
1154	260	7.5	Kalundborg (Denmark). (*Relays Copenhagen*)	
1117	268.5	40	Moscow, Popoff RV58 (Russia)	
1083	277	60	Oslo (Norway)	
1071	280	35	Tiflis, RV7 (Russia)	
1035	290	36	Kiev, RV9 (Russia)	
1000	300	100	Moscow (Russia)	
938	320	20	Kharkov, RV4 (Russia)	
857	350	100	Leningrad (Russia)	
840	357	18.5	Budapest (Hungary)	
825	363.6	50	Sverdlovsk, RV5 (Russia)	
770	389	0.6	Ostersund (Sweden). (*Relays Stockholm*)	
760	395	1.3	Geneva (Switzerland). (*Relays Sottens*)	
720	416.6	20	Moscow, RV2 (Experimental) (Russia)	
690	434.6	1.5	Oulu (Uleaborg) (Finland)	
680	441.2	0.6	Lausanne (Switzerland). (*Relays Sottens*)	
574.7	522	0.7	Hamar (Norway). (*Relays Oslo*)	
574.7	522	2.5	Ljubljana (Yugoslavia)	
569	527	0.25	Freiburg-im-Breisgau (Germany). (*Relay Stn.*)	
568.1	528	2	Grenoble (France)	
566	530	0.25	Hanover (Germany). (*Relays Hamburg*)	
563	533	16	Wilno (Poland). (*Relay Station*)	
560	536	0.25	Augsburg (Germany). (*Relays Munich*)	
560	536	1.5	Kaiserslauten (Germany). (*Relays Munich*)	
558.6	537	1	Tampere (Finland). (*Relays Helsinki*)	
550	545	18.5	Budapest No. 1 Lakihegy (Hungary)	
542	554	10	Sundsvall (Sweden). (*Relays Stockholm*)	
537.6	558	3	Palermo (Italy)	
533	563	60	Munich (Germany)	
525	571	15	Riga (Latvia)	
517	580	15	Vienna (Rosenhügel) (Austria)	
509	589	15	Brussels No. 1, Velthem (Belgium). (*In French*)	
500.8	599	20	Florence, IFI (Italy). (*Relays Turin*)	
495.8	605	1.2	Trondheim (Norway)	
488.6	614	120	Prague, No. 1 (Czechoslovakia)	
480	625	50	North Regional (Manchester)	
472.4	635	60	Langenberg (Germany)	
467	642	0.4	Aalesund (Norway)	
465.8	644	1.5	Lyons la Doua, PTT (France)	
459.4	653	60	Beromünster (Schweizerischer Landessender) (Switzerland).	
453.2	662		San Sebastian, EAJ8 (0.6 kW.); Pori (1.0 kW.) (Finland); Danzig (0.5 kW.) (*relays Heilsberg*); Klagenfurt (0.5 kW.) (Austria) (*relays Vienna*); Porsgrund (0.7 kW.) (*relays Oslo*). Tromsö (0.1 kW.), Bodö (0.5 kW.) (Norway); Upsala (0.15 kW.) (Sweden) (*relays Stockholm*).	
453.2	662	10	Odessa, RV13 (Russia)	
447.1	671		Paris, Ecole Supérieure, PTT (7.0 kW.); Rjukan (0.15 kW.), Notodden (0.08 kW.) (Norway) (*relays Oslo*).	
441.2	680	50	Rome, IRO. (*S.-W. Station, 2RO on* 25.4 *m.*)	
435.4	689	55	Stockholm, SASA (Sweden)	
430	698	2.5	Belgrade (Yugoslavia)	
424.3	707	2	Madrid, EAJ7 (Union Radio). (*After* 7.0 *p.m.*)	
424.3	707	100	Moscow, Imini Stalina (Russia)	
419.5	715	1.5	Berlin, No. 1, Witzleben (Germany)	
416.4	720.5	5	Rabat (Morocco)	
413	725	60	Athlone (Irish Free State)	
408.7	734	16	Katowitz (Poland)	
403.8	743	25	Sottens (Radio Suisse Romande) (Switzerland)	
398.9	752	25	Midland Regional	
394.2	761	12	Bucharest (Roumania)	
389.6	770	120	Leipzig (Germany)	
389.6	770	10	Archangel, RV36 (Russia)	
385.1	779	8	Toulouse (Radiophonie du Midi) (France)	
385.1	779	10	Stalino, RV26 (Russia)	
381	788	16	Lwow (Lemburg) (Poland)	
376.4	797	50	Scottish Regional (Falkirk)	
372.2	806	1.5	Hamburg (Germany)	
370.1	810.5	0.8	Radio, LL, Paris	
368.1	815		Seville, EAJ5 (Union Radio) (1.0 kW.) (Spain); Bolzano (1.0 kW.) (Italy); Helsinki (10 kW.) (Finland) (*relays Lahti*); Kharkov, RV20 (10 kW.) (Russia).	
365.8	821	0.7	Fredriksstad (Norway). (*Relays Oslo*)	
364.1	824	1	Bergen (Norway)	
363.6	825	13	Algiers (Algeria)	
360.6	832	60	Mühlacker (Stuttgart) (Germany)	
355.9	843	50	London Regional (Brookmans Park)	
352.1	852	7	Graz (Austria). (*Relays Vienna*)	
348.8	860	7.6	Barcelona, EAJ1 (Spain)	
348.8	860	10	Leningrad, RV70 (Russia)	
345.2	869	11.5	Strasbourg, PTT (France)	
341.7	878	35	Brno (Brunn) (Czechoslovakia)	
338.2	887	15	Brussels II, Velthem (Belgium). (*In Flemish*)	
335	896	5	Cadiz (Spain)	
334.4	897	1.9	Poznan (Poland)	
331.5	905	50	Milan (Italy). (*Relays Turin*)	
328.2	914	60	Poste Parisien (France)	
325	923	60	Breslau (Germany)	
321.9	932	10	Göteborg (Sweden). (*Relays Stockholm*)	
318.8	941	0.25	Dresden (Germany). (*Relays Leipzig*)	
318.8	941	1.5	Naples, INA (Italy). (*Relays Rome*)	
315.8	950	1.6	Marseilles, PTT (France)	
312.8	959	1.7	Cracow (Poland)	
312.8	959	10	Genoa, IGE (Italy). (*Relays Turin*)	
309.9	968	1	Cardiff	
307	977	0.7	Radio Vitus (Paris). (*S.-W. Stn. on* 43.75 *m.*)	
304	986	13	Bordeaux Lafayette, PTT (France)	
301.5	995	50	North National (Manchester)	
298.8	1004	11	Tallinn (Esthonia)	
296.1	1013	20	Huizen (Holland). (*After* 4.40 *p.m.*) (*Exchanges wavelengths with Hilversum every three months.*)	
293.5	1022	0.7	Limoges, PTT (France)	
293.5	1022	2.6	Kosice (Czechoslavakia)	
291	1031	10	Viipuri (Viborg) (Finland). (*Relays Helsinki*)	
288.3	1040	50	Scottish National (Falkirk)	
288.3	1040	—	British Relays (Bournemouth, Plymouth)	
286	1049	0.8	Montpellier (France)	
285.1	1052	0.7	Lyons (Radio-Lyon) (France)	

BROADCASTING STATIONS ABROAD (In Order of Wavelength).

Metres.	Kc.	kW.	Station.	Tuning Positions.
283.6	1058	0.5	German Relays (Berlin, Magdeburg, Stettin)	.....
283.6	1058	0.5	Innsbruck (Austria). (*Relays Vienna*)	.....
282.2	1063	2	Lisbon (CT 1AA (Portugal). (*Short-wave Station on 31.25 m.*)	.....
281.2	1067	0.75	Copenhagen (Denmark)	.....
278.8	1076	13.5	Bratislava (Czechoslovakia)	.....
276.5	1085	60	Heilsberg (Germany)	.....
273.7	1096	7	Turin (Italy)	.....
271.5	1105	1.3	Rennes, PTT (France)	.....
269.8	1112	20	Bari (Italy)	.....
269.8	1112	0.25	Bremen (Germany). (*Relays Hamburg*)	.....
267.6	1121	1.5	Valencia (Spain)	.....
265.8	1128.5	1.3	Lille, PTT (France)	.....
263.8	1137	11.2	Moravska Ostrava (Czechoslovakia)	.....
261.5	1147	50	London National (Brookmans Park)	.....
259.3	1157	17	Frankfurt-a.M. (Germany)	.....
257.1	1167	10	Hörby (Sweden). (*Relays Stockholm*)	.....
255.1	1176	0.7	Toulouse, PTT (France)	.....
253.1	1185	5	Gleiwitz (Germany). (*Relays Breslau*)	.....
252	1193	1	Barcelona, EA-115 (Assoc. Nat.) (Spain)	.....
249.6	1202	0.8	Juan-les-Pins, Nice (France)	.....
247.7	1211	10	Trieste (Italy)	.....
245.9	1220	0.12	Swansea	.....
245.9	1220		Berne (0.5 kW.) (Switzerland) (*relays Beromünster*); Eskilstuna (0.2 kW.), Säffle (0.4 kW.) (Sweden) (*relays Stockholm*); Cassel (0.25 kW.) (Germany) (*relays Frankfurt*); Linz (0.5 kW.) (Austria) (*relays Vienna*); Pietatsaari (0.5 kW.), Turku (Abo) (0.5 kW.) (Finland) (*relays Helsinki*); Schaerbeek (0.1 kW.) (Belgium)	.....
244.1	1229	0.5	Basle (Switzerland). (*Relays Beromünster*)	.....
242.3	1238	1	Belfast (N. Ireland)	.....
240.6	1247	0.5	Stavanger (Norway)	.....
238.9	1256	2	Nürnberg (Germany). (*Relays Munich*)	.....
238	1260	1	Nimes (France)	.....
237.2	1265	3	Bordeaux, Sud-Ouest (France)	.....
235.5	1274	0.5	Kristiansand (Norway)	.....
235	1283	1.65	Lodz (Poland). (*Relay Station*)	.....
232.2	1292	0.25	Kiel (Germany). (*Relays Hamburg*)	.....
230.6	1301	—	Swedish Relay Stations. (Malmö, Norrköping, Karlstad and Trollhätten).	.....
229	1310	0.5	Umea (Sweden)	.....
227.4	1319	0.5	Flensburg (Germany). (*Relays Hamburg*)	.....
224.4	1337	1	Cork (Irish Free State)	.....
223	1345	10	Fécamp, Radio-Normandie (France)	.....
222.9	1346	0.15	Hüdiksvall (Sweden)	.....
219.9	1365	1.5	Béziers (France)	.....
218.5	1373	0.2	Plymouth	.....
218.5	1373	0.5	Salzburg (Austria). (*Relays Vienna*)	.....
217	1382	0.5	Königsberg (East Prussia) (Germany)	.....
217	1382	0.25	Karlstad (Sweden)	.....
215.6	1391	0.1	Brussels, Radio-Chatelineau (Belgium)	.....
215.6	1391	0.2	Halmstad (Sweden)	.....
214.3	1400	1	Aberdeen	.....
214.3	1400	10	Warsaw, No. 2 (Poland)	.....
211.3	1420	1	Newcastle	.....
209	1430	0.8	Magyarovar and Miskolcz (Hungary)	.....
207	1450	0.15	Boras (Sweden)	.....
206	1460	0.2	Ornsköldsvik (Sweden)	.....
204.1	1470	0.2	Gävle (Sweden)	.....
202.7	1480	0.25	Kristineham (Sweden)	.....
201.3	1490	0.25	Hälsingborg (Sweden)	.....
195	1530	0.2	Karlskrona (Sweden)	.....

PRINCIPAL SHORT-WAVE STATIONS.

(N.B.—Times of Transmission, given in parentheses, are approximate only and represent G.M.T.)

Metres.	Kc.	Call Sign.	Station.	Tuning Positions.
80.0	3,750	2RO	Rome	.....
70.2	4,273	RW15	Khabarovsk (Russia). (*Daily* 09.00–12.00)	.....
62.56	4,795	VE9BY	London, Ont. (Canada). (*Sun.* 06.00)	.....
62.5	4,800	W2XV	Long Island, N.Y. (U.S.A.). (*Fri.* 24.00)	.....
58.3	5,146	PMY	Bandoeng (Java). (*Daily* 12.20 *and* 07.00.)	.....
58.0	5,172	OK1MPT	Prague (Czechoslovakia). (*Tues. and Fri.* 19.30.)	.....
54.52	5,502	W2XBH	Brooklyn, N.Y. (U.S.A.). (*Relays WGGC*)	.....
52.7	5,690	FIU1	Tananarive, P.T.T. (Madagascar)	.....
52.5	5,714	HCJB	Quito (Ecuador). (*Daily* 12.30)	.....
51.22	5,857	XDA	Chapultepec (Mexico)	.....
50.6	5,930	HKO	Medellin (Colombia)	.....
50.26	5,970	HVJ	Vatican State, Rome. (*Daily* 19.00)	.....
50.0	6,000	ZL3ZC	Christchurch (New Zealand). (*Wed.* 03.00, *Sat.* 07.30.)	.....
50.0	6,000	— —	Bucharest (Roumania)	.....
50.0	6,000	RW59	Moscow	.....
50.0	6,000	EAR25	Barcelona, Radio Club (Spain). (*Sat.* 20.00.)	.....
49.96	6,005	VE9DR	Drummondville (Canada). (*Relays CFCF*, 01.00–05.00.)	.....
49.96	6,005	HRB	Tegucigalpa (Honduras). (*Daily ex. Sun.* 00.00–05.00.)	.....
49.83	6,020	W9XF	Chicago, Ill. (U.S.A.). (*Relays WENR*)	.....
49.8	6,023	XEW	Mexico City (Mexico). (*Daily* 01.00)	.....
49.67	6,042	W2XAL	Coytesville, N.J. (U.S.A.). (*Relays WRNY.*)	.....
49.59	6,050	VE9HX	Halifax (Nova Scotia). (*Relays CHNS*)	.....
49.58	6,050	GSA	Empire Broadcasting, Zones 4–5	.....
49.5	6,060	VQ7LO	Nairobi (Kenya Colony). (*Daily* 16.30)	.....
49.5	6,060	W8XAL	Mason, Ohio (U.S.A.). (*Relays WLW*)	.....
49.5	6,060	W3XAU	Philadelphia, Pa. (U.S.A.). (*Relays WCAU.*)	.....
49.43	6,069	VE9CS	Vancouver, B.C. (Canada)	.....
49.4	6,072	UOR2	Vienna. (*Tues.* 13.00, *Thurs.* 15.00, *Sat.* 23.00.)	.....
49.34	6,080	W2XCX	Kearny, N.J. (U.S.A.). (*Relays WOR*)	.....
49.34	6,080	W9XAA	Chicago, Ill. (U.S.A.). (*Relays WCFL*)	.....
49.22	6,095	VE9GW	Bowmanville, Ont. (Canada). (*Daily* 20.00)	.....
49.2	6,098	ZTJ	Johannesburg (S. Africa). (*Weekdays* 09.00, 11.00 [*Sat.* 11.30] *and* 17.00, *Sun.* 13.00 *and* 17.30.)	.....
49.18	6,100	W3XAL	Bound Brook, N.Y. (*Relays WJZ*)	.....
49.1	6,110	VUC	Calcutta, India. (*Daily* 13.00)	.....
49.02	6,120	W2XE	Long Island, N.Y. (U.S.A.). (*Relays WABC.*)	.....
48.86	6,140	W8XK	East Pittsburg, Pa. (U.S.A.). (*Relays KDKA.*)	.....
48.8	6,147	VE9CL	Winnipeg (Canada). (*Daily ex. Sun.* 00.30)	.....
48.65	6,167	XIF	Mexico City (Mexico)	.....
48.35	6,205	HKC	Bogota (Colombia). (*Daily* 15.00)	.....
48.2	6,220	2RO	Rome (Italy)	.....
48.05	6,243	HKD	Barranquilla (Colombia). (*Weekdays* 23.15)	.....
48.0	6,250	CNSMC	Casablanca (Morocco). (*Relays Rabat*)	.....
47.0	6,382	HCJDR	Quito, Ecuador. (*Daily* 01.00)	.....
46.69	6,425	W3XL	Bound Brook, N.J. (U.S.A.). (*Relays WJZ irregular.*)	.....
46.67	6,426	VE9BY	London, Ont. (Canada). (*Sat.* 01.00 *Sun.* 02.00.)	.....
45.38	6,611	REN	Moscow (*Relays Trade Union Stn.*)	.....
45.0	6,667	FM8KR	Constantine (Algeria). (*Mon. and Fri.* 23.00.)	.....
45.0	6,667	TGW	Guatemala City (Central America). (*Daily* 03.00.)	.....
43.75	6,860	—	Radio Vitus, Paris. (*Daily* 20.30)	.....
43.0	6,970	EAR110	Madrid. (*Tues. and Sat.* 22.30)	.....
41.7	7,195	VS1AB	Singapore (Malay States). (*Sun. and Wed.* 15.30.)	.....
41.6	7,211	EAR58	Teneriffe (Radio Club) (Canary Islands)	.....
41.5	7,230	HB9D	Zurich (Radio Club) (Switzerland). (*1st and 3rd Sun.*)	.....
41.0	7,320	HSP2	Bangkok (Siam). (*Mon.* 11.00)	.....
40.3	7,443	HBQ	Radio Nations, Prangins (Switzerland). (*Sun.* 22.00-22.15)	.....
39.7	7,556	HKF	Bogota (Colombia). (*Westinghouse Labs.*)	.....
39.4	7,612	X26A	Nuevo Laredo (Mexico). (*Thurs.* 16.00)	.....
38.7	7,797	HBL	Radio Nations, Prangins (Switzerland). (*Sun.* 22.00 22.45.)	.....
36.92	8,125	PLW	Bandoeng (Java). (*Daily* 10.00 11.00)	.....
34.68	8,650	W2XV	Long Island, N.Y. (U.S.A.). (*Fri.* 23.00)	.....
34.68	8,650	VE9BY	London, Ont. (Canada). (*Mon.* 21.00)	.....
33.50	8,928	TGX	Guatemala City (S. America)	.....
32.26	9,300	—	Rabat (Morocco). (*Sun.* 21.00)	.....
31.58	9,500	PRBA	Rio de Janeiro (Brazil). (*Daily* 21.30)	.....
31.55	9,510	VK3ME	Melbourne (Australia). (*Wed. and Sat.* 10.00.)	.....
31.54	9,510	GSB	Empire Broadcasting, Zones 2, 4, 5	.....
31.51	9,520	OXY	Skamlebaek (Denmark). (*Relays Copenhagen.*)	.....
31.48	9,530	W2XAF	Schenectady, N.Y. (U.S.A.). (*Relays WGY*)	.....
31.38	9,560	DJA	Zeesen (Germany). (*Daily* 13.00)	.....
31.35	9,570	SRI	Posen (Poland). (*Tues. and Thurs.* 17.30)	.....
31.35	9,570	W1XAZ	East Springfield, Mass. (U.S.A.). (*Relays WBZ.*)	.....
31.3	9,582	W3XAU	Philadelphia, Pa. (U.S.A.). (*Daily ex. Thurs. and Fri.* 24.00.)	.....
31.3	9,580	HBL	Radio Nations, Prangins (Switzerland). (*Sun.* 22.00-22.15)	.....
31.29	9,585	GSC	Empire Broadcasting, Zone 3	.....
31.28	9,590	VK2ME	Sydney (Australia). (*Sun.* 10.00)	.....
31.25	9,598	CTIAA	Lisbon (Portugal). (*Tues. and Fri.* 22.00-24.00)	.....
31.10	9,640	HS2PJ	Bangkok (Siam). (*Mon.* 02.00–05.00)	.....
30.43	9,869	EAQ	Aranjuez (Spain). (*Daily* 23.30, *Sat.* 18.00)	.....
30.0	10,000	—	Belgrade (Yugoslavia). (*Mon.* 19.00)	.....
29.3	10,228	TI4NRH	Heredia (Costa Rica). (*Daily* 22.00 *and* 02.00.)	.....
28.98	10,350	LSX	Buenos Aires (Argentina). (*Daily* 20.30)	.....
26.83	11,180	CT3AQ	Funchal (Madeira). (*Tues. and Thurs.* 10.30–12.30.)	.....
25.63	11,700	FYA	Pontoise (France). (*Colonial Stn. E-W, daily* 20.00.)	.....
25.6	11,720	VE9JR	Winnipeg (Canada). (*Daily ex. Sat. and Sun.* 17.45)	.....
25.53	11,750	GSD	Empire Broadcasting, Zones 1 & 4	.....
25.5	11,760	XDA	Chapultepec (Mexico). (*Daily* 20.00)	.....
25.4	11,810	VE9GW	Bowmanville (Canada). (*Daily* 18.00)	.....
25.4	11,810	2RO	Prato Smeraldo, Rome. (16.00 *and* 19.30)	.....
25.34	11,840	W9XAA	Chicago, Ill. (U.S.A.). (*Relays WCFL*)	.....
25.28	11,865	GSE	Empire Broadcasting, Zone 2	.....
25.27	11,870	W8XK	East Pittsburg, Pa. (U.S.A.). (*Relays KDKA.*)	.....
25.2	11,905	FYA	Pontoise (France). (*Colonial Stn. N-S*)	.....
23.38	12,830	—	Rabat (Morocco). (*Sun.* 11.30)	.....
20.5	14,630	XDA	Chapultepec (Mexico). (*Daily* 19.30)	.....
19.9	15,075	TI4NRH	Heredia (Costa Rica). (*Sat., Sun., Mon.* 16.00 *and* 21.00)	.....
19.84	15,120	HVJ	Vatican State, Rome. (*Daily* 10.00)	.....
19.81	15,140	GSF	Empire Broadcasting, Zone 5	.....
19.73	15,200	DJB	Zeesen (Germany). (*Daily* 13.00–17.00)	.....
19.72	15,210	W8XK	East Pittsburg, Pa. (U.S.A.) (*Relays KDKA.*)	.....
19.68	15,244	FYA	Pontoise (France). (*Colonial Stn. E-W*)	.....
19.56	15,340	W2XAD	South Schenectady, N.Y. (U.S.A.) (*Daily* 18.00.)	.....
16.9	17,750	HSP	Bangkok (Siam). (*Sun. and Tues.* 21.00)	.....
16.88	17,770	GSG	Empire Broadcasting, Zone 2	.....
16.87	17,780	W3XAL	Bound Brook, N.J. (*Weekdays* 13.00)	.....
16.57	18,105	W9XAA	Chicago, Ill. (U.S.A.). (*Relays WCFL*)	.....
14.47	20,730	LSY	Buenos Aires (Argentina). (*Sun.* 21.00)	.....
13.97	21,470	GSH	Empire Broadcasting, Zone 3 (*Daylight working*)	.....
13.92	21,540	W8XK	East Pittsburg (*Relays KDKA.*)	.....

FOREIGN SUNDAY PROGRAMMES

FEBRUARY THE TWENTY-SIXTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL	Orchestral concert. "The Future Life," by Miss Maude Royden. Instrumental concert. Song recital. A Welsh Service from West Regional. Religious Service from Dunblane Cathedral. Oratorio programme.
LONDON REGIONAL	Military Band concert. Religious Service, from Eton Parish Church. Sunday orchestral concert.
MIDLAND REGIONAL	Instrumental concert. Service conducted by Rev. H. V. Turner, from St. Mary's Church, Nottingham.
NORTH REGIONAL	Service from Eastbrook Hall, Bradford. London Regional programme.
WEST REGIONAL	Welsh Service from Capel Noddfa, Treorchy. Service from Horfield Baptist Church, Bristol.
SCOTTISH REGIONAL	Religious service relayed from Dunblane Cathedral. Orchestral concert. Pianoforte recital.
BELFAST	National and Scottish Regional programmes.

ABROAD

BERO-MUNSTER	4 p.m. Oratorio: "Joseph and his Brethren" (Handel). from Basle.
BRUSSELS (No. 1)	2.30 p.m. Beethoven Festival Concert.
BRUSSELS (No. 2)	7 p.m. Operetta: "The Land of Smiles" (Lehar). from Antwerp.
HAMBURG	7 p.m. Italian concert by the Philharmonic Orchestra.
HEILSBERG	7.10 p.m. Operetta: "Liebe in Schnee" (Benatzky).
LANGENBERG	7 p.m. Carnival programme.
STRASBOURG	3 p.m. Symphony concert from the Conservatoire, Paris.

ATHLONE

413 metres; 60 kW.; and CORK, 224.4 metres. 3.30 p.m., Time Signal. **3.31**, Orchestral Concert. Soloist, Ben Williams (Tenor). **9.0**, The Adventures of Ellis Palmer—Play, presented by Ian P. Mitchell and Company. **9.45**, Violin Recital by Edith Kelly Lange. **10.5**, Soprano Solos by Mme. K. McCaffery. **10.20**, Orchestral Music. **10.35**, Popular Music on Gramophone Records. **11.0**, Time, News, Weather, and Close Down.

BARCELONA

RADIO-BARCELONA, Call EAJ1, 348.8 metres; 8 kW.—11.0 a.m., Chimes from the Cathedral and Weather Forecast. **1.0 p.m.**, Popular Music on Gramophone Records. **1.30** (in an interval). Theatre Notes. **2.0**, Film Review and Sextet Concert. **3.0**, Programme for Hospitals and other Benevolent Institutions, with Gramophone Records. **4.0 to 5.30**, Interval. **5.30**, Agricultural Talk in Catalan, followed by an Opera relayed from the Gran Teatro del Liceo. **9.0**, A Musical Comedy on Gramophone Records. **10.45**, Chess Lesson. **11.0** (approx.), Close Down.

BARI

269.8 metres; 20 kW.—9.45 a.m., Agricultural Report. **10.5**, Sacred Music. **10.30**, Religious Programme. **12 Noon**, Giornale Radio. **12.10 to 1.15 p.m.**, Quintet Concert. In the intervals at **12.25**, Weather, and at **1.0**, Time and Announcements. **4.30 to 5.30**, Popular Music on Gramophone Records. **7.0**, Sports Notes and Giornale Radio. **7.30**, Time and Announcements. **7.35**, Variety Concert. In the interval, Reading. **9.30**, Music relayed from the Gran Caffé del Levante. **9.55**, News.

BASLE.—See **Schweizerischer Landessender.**

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—10.30 a.m., See **Leipzig. 11.0**, Concert from **Hamburg. 11.55** (in an interval), Nauen Time Signal. **1.0 p.m.**, Talk for Parents. **1.30**, Talk: The German Wireless Station in Chicago. **2.0**, Richard Billinger reads from his own Works. **2.30**, Chamber Music. **3.15**, Talk: Art Centres and Art Treasures of the Nations—Frederick the Great as an Architectural Patron. **3.40**, Concert from **Munich. 4.40**, Deutschordenskamp um Preussen—An Historical Radio Sequence (Dr. Heinrich Bauer). **5.20**, Recital of Unfamiliar Polonaises (Robert Schumann). **6.5**, Talk on Winter Relief. **6.25**, The Young Generation Speaks: Theatre or Cinema? **7.0**, See **Leipzig. 9.0**, Weather, News and Sports Notes. **9.45**, Weather Report for Shipping. **10.0**, Dance Music and Sports Report from **Berlin (Witzleben). 11.0** (approx.), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—10.30 a.m., See **Leipzig. 11.0**, Concert from **Hamburg. 1.0 p.m.**, Talk for Parents. **1.30**, Programme for Young People. **2.30**, Wind Instrument Concert. **3.15** (approx.), In the Camp of the Berlin Gliders—a Radio Report from Trebbin. **3.40**, Concert (contd.). **4.40**, Anecdotes for Smokers. **5.0**, Talk: Comradeship in the Simple Life. **5.20**, Clarinet Quintet in B Minor, Op. 115 (Brahms). **6.0**, Carnival Programme. **6.50**, Sports Notes. **6.55**, The Watchword. **7.0** Concert by the Philharmonic Orchestra, conducted by Julius Prüwer, relayed from the Philharmonie. Carnival Overture (Dvorák); Serenade (Haydn); Forget-me-not (Macbeth); Suite for Clarinet and Pianoforte (B. Alt): (a) Ballad, (b) Berceuse, (c) Bagatelle, (d) Burlesque; Ballet Music from Le Cid (Massenet); Overture, Si j'étais Roi (Adam); Ballet Music from Faust (Gounod); First Suite from Carmen (Bizet); Waltz, The Skaters (Waldteufel); Overture, The Gipsy Baron (Joh. Strauss). **9.0**, Weather, News and Sports Notes. **9.30** (approx.), Radio Report on the International Handball Tournament, relayed from the Sportpalast, followed by Dance Music by the Waldemar Hass Band. In an interval at **10.15** (approx.), Radio Report on the Final of the International Ice Hockey Championship in Prague (on Gramophone Records).

BERNE.—See **Schweizerischer Landessender.**

BEROMUNSTER.—See **Schweizerischer Landessender.**

BODEN.—See **Stockholm.**

BODO.—See **Oslo.**

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—8.0 a.m., Review of the Paris Morning Press, relayed from **Paris (Ecola Supérieure), 447.1 metres. 12 Noon**, Concert, relayed from **Paris (Ecole Supérieure). 2.0 p.m.**, Relay from **Paris** or Relay of a Local Festival. **3.0**, Concert, relayed from **Paris (Ecole Supérieure). 6.30**, Radio Journal. **7.45**, Sports Talk. **8.0**, Talk for Ex-Servicemen. **8.15**, Lottery Results. **8.30**, Popular Music on Gramophone Records. **9.0**, Le Panache—Farce in Three Acts (Gondinet).

BRATISLAVA

279 metres; 11 kW.—3.30 p.m., Concert by the Station Orchestra, conducted by F. Dyk: Overture, Mascaniello (Auber); Selection from Martha (Flotow); Waltz, Donausagen (Fucik); In a Monastery Garden (Ketelbey); Selection from White Horse Inn (Benatzky); Melody (Sulek). **4.30**, See **Prague. 4.45**, Recital of Moravian Songs. **5.10**, Concert of Light Music relayed from the Carlton Hotel. **5.45**, Talk from **Kosice (293 metres). 6.0**, See **Brno. 7.0** till Close Down, See **Prague. 10.35** (approx.), Close Down.

BREMEN. See **Hamburg.**

BRESLAU

325 metres; 60 kW; and GLEIWITZ, 253 metres—10.0 a.m., Concert and Addresses, relayed from **Ratibor. 11.0**, See **Hamburg. 1.0 p.m.**, News. **1.5**, Talk: Common Terms used in Political Economy. **1.20**, Hints for Photographers. **1.35**, Talk: August Macke, the Pioneer of German Expressionism. **1.50**, Talk: In the Sunny Land of Dalmatia. **2.10**, Radio Report on the Ski Championships of the Ex-German Winter Sports Union in Czechoslovakia, relayed from **Romerstadt. 2.35**, Wars: wide Wurzel—Radio Play for Children (Lisa Tetzner). **3.5**, Georg Langer reads from his Book, Richter Wichura. **3.35**, Concert by the Station Orchestra, conducted by Franz Marszalek: Soloist: Hellmut Hallendorf (Tenor); Selection from Der Orlow (Granichstaedter); Vibraphone Solo: Elegy (Zwirner); Waltz, The Wedding of the Winds (Hall); Czardas (Gabriel Marie); Kiss Serenade (Michel); Overture, Die geschiedene Frau (Fall). **5.0**, Sports Review. **5.30**, Beethoven Pianoforte Recital by Georg Dohm: Rondo in G, Op. 51, No. 2; Sonata in E Flat, Op. 81a. **6.0**, Talk: German Oratory. **6.25**, Weather Forecast. **6.30**, Humorous Programme by Adolf Gondrell. **7.0**, See **Leipzig.** In an interval at **7.45** (approx.), News Bulletin. **9.0**, Time, Weather, News, Sports Notes and Programme Announcements. **9.20**, Dance Music and Sports Report from **Berlin (Witzleben).** In an interval, Report of the European Ice Hockey Championship, relayed from **Prague. 11.0** (approx.), Close Down.

BRNO

342 metres; 35 kW.—11.5 a.m., Military Band Concert. **12.30 p.m.**, Agricultural Report. **1.0 to 1.15**, Agricultural Talk. **2.30**, See **Prague. 3.30**, See **Bratislava. 4.30**, Light Music on Gramophone Records. **5.0**, German Transmission: Concert by K. Jirka (Songs), J. Lévay (Harpsichord), Stefan Petrik (Violin), and Kurt Glas (Pianoforte). **6.0**, Popular Concert. **7.0**, See **Prague. 10.35**, (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—10.0 a.m., Gramophone Concert. **11.0**, Concert of Modern French Music by the Small Station Orchestra, conducted by P. Leemans. Soloists: M. Derisseen ('Cello) and M. Wigy (Violin). **12 Noon**, Concert relayed from the Grand Hotel, Antwerp. Conductor André Felleman. Soloist: Jules Lewis (Saxophone). **1.0 p.m.**, Journal Parlé. **1.10**, Concert by the Mickey's Club Jazz Attraction, conducted by Ludo Langlois. **1.55**, Entr'ôme à placer—Sketch (Jean Dess). **1.40**, Concert by Mickey's Club Jazz Attraction (contd.). **2.30**, Beethoven Concert by the Philharmonic Society, relayed from the Palais des Beaux Arts. Conductor: Erich Kleiber. First Symphony in C; Gramophone Record: Sonata, Op. 81; Second Symphony in D; Overture, Leonora, No. 3. **5.0**, Dance Music relayed from the St. Sauveur Palais de Danse. **5.30** (in an interval), Football Results. **5.45**, Sonata Recital: Sixteenth Sonata (Mozart); Sonata in G (Fauré). **6.15**, Gramophone Concert: Airs d'Auvergne (Debroux); Chromatic March (Courtade); Italian Fantasy (Delmas); Marguerite's Aria from Mephistopheles (Boito); Lang, lang, isi's her (Dietrich); Egyptian March (Joh. Strauss). **6.50**, Song Recital by Mme. Moulaert-Maas. **7.15**, Religious Address. **7.30**, Talk on Music. **8.0**, Concert by the Station Orchestra, conducted by Franz André. Soloists: Paul Collaer (Pianoforte) and White Johnson and Durand (Songs). **8.40**, Cambriolage—One-Act Play (George Delamare). **9.0**, Orchestral Concert (contd.). **10.0**, Journal Parlé. **10.10**, Hot Jazz. **10.40**, Light Music on Gramophone Records. **12 Midnight** (approx.), Close Down.

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW. Programme in Flemish. **10.0 a.m.**, Concert of Mozart and Beethoven Music by the Small Station Orchestra, conducted by P. Leemans. Soloists: M. Wigy (Violin) and M. Doniiez (Pianoforte). **11.0**, Gramophone Concert: Overture, Patrie (Bizet); Symphonic Poem, Le chasseur maudit (Franck); Scherzo (Lalo); Quartet, Op. 59, No. 2 (Beethoven). **12 Noon**, Concert by Mickey's Club Jazz Attraction, conducted by Ludo Langlois. **1.0 p.m.**, Journal Parlé. **1.10**, Concert of Sound Film Music, relayed from the Grand Hotel, **Antwerp.** Conductor: André Felleman. **2.25**, Germany v. Belgium, Running Commentary on the Football Match, relayed from **Cologne. 5.0**, Concert by the Radio Orchestra, conducted by Franz André: March (Faulx); Waltz (Colin); Selection from les cloches de Corneville (Planquette); Hungarian Rhapsody, No. 2 (Liszt); Waltz, Your Heart's Mine (Heartly); Selection from The Merry Widow (Lehar); Pasodoble, Seville (Bellstram). In the interval at **5.15** (approx.), Football Match Results. **6.0**, Trio No. 2 in C (Mendelssohn), on Gramophone Records. **6.30**, Introductory Talk to the **8.0 p.m.** Relay. **7.0**, Mazeppa (Liszt) on Gramophone Records. **7.15**, Religious Address: The Idea of Eternity. **7.30**, Talk on Music. **8.0**, The Land of Smiles—Operetta (Lehar), relayed from the Flemish Royal Theatre, **Antwerp.** In the intervals, Recitations and Journal Parlé. After the Concert, Dance Music on Gramophone Records. **12 Midnight** (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—9.15 a.m., Programme for Children. **9.30**, Bible Reading. **9.45**, Choral Concert of Sacred Music. **10.0**, Military Music. **11.0**, Light Music on Gramophone Records. **11.45**, News and Time Signal. **12 Noon**, Popular Music on Gramophone Records. **3.0**, Programme for Peasants. **4.0**, Concert of Light Music and Roumanian Music, by the Jean Marco Orchestra. **5.0**, News and Time Signal. **5.10**, Variety Programme. **5.25**, Concert by the Jean Marco Orchestra (contd.). **6.0**, Talk on Roumania. **6.40**, Popular Music on Gramophone Records. **7.0**, Time Signal. **7.1**, Two Operettas (Offenbach): (a) Monsieur Choufleur, (b) The Betrothal by Lanternlight. In the intervals: News.

BUDAPEST

550 metres; 18.5 kW. Also relayed on **840 metres** from **6 p.m.** till Close Down.—**8.0 a.m.**, News and Beauty Hints. **9.0**, Divine Service Relay. **10.15**, Protestant Service, followed by Time, Weather and Orchestral Concert. **1.0. p.m.**, Gramophone Concert of Variety Music. **2.0**, Agricultural Talk. **2.45**, Educational Talk. **3.30**, News. **3.35**, Cigány Music by the Gyula Lakatos Band. **4.15**, Strauss Concert, relayed from the Redoute: Conductor, L. D. Bor. Soloist, Ilona Ladányi (Songs): Selection from Eine Nacht in Venedig; Waltz, Wo die Zitronen blühn; Polka, Tingl tangl; Selection from (a) The Gipsy Baron, (b) Die Fledermaus; The Emperor Waltz; Overture; Overture, Die Fledermaus; Waltz, The Blue Danube; Mazurka; Pizzicato Polka; Frühlingsstimmen Polka; Polka, Entweder oder. **6.0**, Skating Report. **6.30**, The Dollar Princess—Operetta in Three Acts (Fall). **9.0**, Announcements, followed by Cigány Music by the Imre Magyari Band, relayed from the Hungaria Hotel. **10.45**, Jazz Music by the Mandits Band, relayed from the New York Café: Soloist, Karl Vajda (Songs). **12 Midnight** (approx.), Close Down.

CASSEL.—See **Frankfurt.**

COPENHAGEN

281 metres; 0.75 kW., and KALUNDBORG, 1,153 metres; 7.5 kW.—9.0 a.m., Divine Service from the Cathedral. **10.30**, Weather Forecast. **10.40**, News. **11.0**, Time and Chimes from the Town Hall. **11.5**, Orchestral Concert from the Axelborg Studio. **12 Noon**, Talk in English: English Universities. **12.20 p.m.**, Reading in German from the Works of Gustav Frenssen. **12.40**, Talk in French: Some Literary and Historical Cliché's. **1.0 to 1.30**, Interval. **1.30**, Gramophone Concert of Light Music. **1.55**, Programme for Children. **2.25**, Concert relayed from the Axelborg Studio: The Radio Orchestra, conducted by Emil Reesen. Soloists: Holger Barding and Einar Norby (Songs). **4.0** (also relayed by **Skamlebaek** on **31.51 metres**), Divine Service from the Castle Church, Christiansborg. **5.20**, Talk on President Hoover. **5.50**, Weather Forecast. **6.0**, News. **6.15**, Time Signal. **6.17**, Sports Notes. **6.30**, Talk for Workers. **7.0**, Chimes from the Town Hall. **7.5**, Modern Music by Louis Preil's Instrumental Ensemble. **7.40**, The Face and the Mask—Radio Play (Ingrid Norby). **8.35**, Faschingsschwank aus Wien for Pianoforte (Schumann), by Folmer Jensen. **8.50**, Modern Music by Louis Preil's Instrumental Ensemble. **9.25**, News. **9.35**, Gramophone Records: Rosa Ponselle: Ernani, Ernani, from Ernani (Verdi); Friedrich Schorr: Sachs' Monologue from The Mastersingers (Wagner); Lauritz Melchior: Song from L'Africaine (Meyerbeer). **9.50**, Modern Music by Louis Preil's Instrumental Ensemble. **10.15**, Dance Music from the Wivex Restaurant. In the interval at **11.0**, Time and Chimes from the Town Hall. **11.30** (approx.), Close Down.

CORK.—See **Athlone.**

DANZIG.—See **Heilsberg.**

DRESDEN.—See **Leipzig.**

FECAMP

225.9 metres; 10 kW.—12 Noon, Radio Gazette. **12.30 p.m.**, News. **12.45**, Variety Concert. **2.30**, Running Commentary on the Football Match—Lille Olympics v. Stade Malherbe Caennais—relayed from Caen. **4.0 to 8 p.m.**, Programme in English by the I.B.C.; C. Danver-Walker, R. Chene, B. McNabb, and W. Crofton Announcing. **4.0 p.m.**, The Nursery Corner. **4.30**, Children's Club Concert. **5.0**, International Broadcasting Club Concert for Liverpool Listeners: War March of the Priests from Athalie (Mendelssohn); Torea-

dor Song from Carmen (Bizet); Special message from Captain Leonard Plugge, President and Founder of the Club. The Whistler and his dog (Pryor); Live, Love, and Laugh, from Congress Dances (Heymann); He's dead but he won't lie down; Oh! Star of Eve, from Tannhäuser (Wagner); Underneath the Arches; Waltz, The Blue Danube (Strauss); Sanctuary of the Heart (Ketelbey); How Deep is the Ocean; Singin' in the bathtub, from The Show of Shows; March of the Liverpool Regiment. **6.0,** Quintet Concert of Light Music.; Minuet from Berenice (Handel). Songs: (a) Passing by, (b) My dreams; Ma Curly-headed babby (Clutsam); On Wings of Song (Mendelssohn). Songs: (a) Green Hills of Somerset, (b) At dawning (Cadman); Melody in F (Rubenstein). **6.30,** Orchestral Concert: Southern Rhapsody (Hosmer); Selection from No, No, Nanette (Youmans); Love sends a little gift of roses (Openshaw); Chinatown, my Chinatown (Deppen); Anchors aweigh (Zimmermann); Selection from Princess Pat (Herbert); Valse Septembre (Godin). **7.0,** Military Band Concert: Selection from Iolanthe (Sullivan); Wee McGregor Patrol (Amers); In a Monastery Garden (Ketelbey); Policeman's Holiday (Ewing); Xylophone Solo: National Emblem (Bagley); The Ribbon Dance (Traditional); In a Persian Market (Ketelbey); Selection from The Pirates of Penzance (Sullivan). **7.30,** Concert of Russian Folk Music; Russian Folk Song and Dance (Traditional); The Red Sarafan (arr. Leontiev); Moonlight; Choir: The Twelve Robbers; In a pine forest (Traditional); Caucasian Gipsy Songs; Choir: The Cossack Prisoners; Lovely Night (arr. Leontiev). **8.0,** Concert of Opera and Operetta Music. **9.0 to 3.0 a.m, (Monday),** Programme in English by the I.B.C. **9.0,** Hospitals Trust Concert of Light Music: Orchestra: Dance Bagatelle (Bourdon); Song: Till tomorrow (Malneck); Orchestra: At the Temple Gates (Johnson); Song: Farewell my native Irish Home; Duet: You'll always be the same sweetheart (Tobias); Orchestra: Ginger Snaps (Bourdon). **9.30,** Sunday Reference Concert of Light Music: Amorettentanze (Gung'l); Violin Solo: Sicilienne and Rigaudon (Francoeur-Kreisler); Baritone Solo: King Charles (White); Selection from Lilac Time (Schubert); Baritone Solo: Droop not young love (Handel); Violin Solo: Valse, Op. 39 (Brahms); Rosenkavalier Waltz (Richard Strauss). **10.0,** Vocal and Instrumental Concert: Orchestra: Say it with songs; Songs: (a) The Gay Highway (Drummond), (b) Phil the fluter's ball; Selection from White Horse Inn (Stolz-Benatzky); Songs: (a) The Yeoman's Wedding (Poniatowsky), (b) The Smugglers' Song (Mortimer); Raspberries. **10.30,** Henlys Concert of Dance Music: Little Nell; Bananas; Cinderella's Wedding Day; Business in Q; I'll never have to dream again; Brother can you spare a Dime?; In the dim dim Dawning; Musical Hall Memories. **11.0,** Orchestral Concert The Rose beetle goes a-wooing (Armandola); Sanctuary of the Heart (Ketelbey); Violin Solos: (a) Caprice Basque (Sarasate), (b) Siciliana Serenata (Schmalstich); Wedgwood Blue (Ketelbey); Violin Solo: An old Viennese Dance (Voglein); Reconciliation (Drigo); Babes in Toyland (Herbert). **11.30,** Banjo Solos: March, Rugby Parade; Heather Bloom; Quartet: Irish Washerwoman; Desert Breeze; Quartet; Miss Macleod's Reel; Banjo Vamp; Riverside. Tattoo March. **12 Midnight,** International Broadcasting Club Concert for Liverpool Listeners. **1.0 a.m. (Monday),** Variety Programme: Hunting Medley; The Barrers in the Walworth Road; Things we want are most hard to get; Jovial Jasper; In the Train; Alice in Wonderland; I love you, I hate You; You'll die if you Worry. **1.30,** Vocal and Orchestral Concert: Selection from Bow Bells; Duets: (a) Down the lane to Home Sweet Home, (b) I remember you from Somewhere, (c) My baby just cares for Me; Selection from The Good Companions; Duets: (a) Say a little prayer for Me, (b) Swingin' in a Hammock, (c) My heart belongs to the Girl. **2.0,** Let's all sing like the birdies Sing; Leave the pretty girls alone; Wanderer; Thompson's old grey Mule; Try a little Tenderness; The old man of the Mountains; When the morning rolls Around; Let's put out the Lights; How do you do, Mr. Brown; So ashamed; Leave a little for Me; Southern Serenade; Pulecze Mr. Hemmingway; My Romance; Everyone says I love You; Pal of my Dreams. **2.57,** I.B.C. Goodnight Melody. **3.0,** Close Down.

FLENSBURG.—See **Hamburg.**

FLORENCE.—See **Turin.**

FRANKFURT

259 metres; 17 kW.: **CASSEL, 245.9 metres; and TRIER, 259.3 metres.—10.30 a.m.,** See **Leipzig. 11.0,** See **Stuttgart. 12 Noon,** See **Langenberg. 1.0 p.m.,** Agricultural Hints. **1.10,** Agricultural Talks. **2.0 to 3.55,** See **Stuttgart. 3.55,** Military Band Concert from London. **5.0,** Ballads of Old Vienna (Franz Karl Ginzkey), recited by the Author. **5.25,** Talk: Community Life and Freedom of the Individual. **5.50,** Watchword: Germany—A Joint Programme for East and West. **6.25,** Sports Notes. **6.35,** The Rape of the Sabine Women—a Humorous Radio Play (Franz and Paul von Schönthan). **7.50,** Wet or Dry—Carnival Programme. **9.0,** Time and Weather. **9.20,** Carnival Programme. **11.0** (approx.), Close Down.

FREDRIKSSTAD.—See **Oslo.**

FREIBURG.—See **Stuttgart.**

GENEVA.—See **Radio-Suisse Romande.**

GENOA.—See **Turin.**

GLEIWITZ.—See **Breslau.**

GOTEBORG.—See **Stockholm.**

GRAZ. See **Vienna.**

HAMAR.—See **Oslo.**

HAMBURG

Call ha (in Morse), **372 metres;** 1.5 kW. Relayed by **Bremen, 269.8 metres; Flensburg, 227.4 metres; Hanover, 566 metres;** and **Kiel, 232.2 metres.—10.30 a.m.,** See **Leipzig. 11.0,** Concert from **Flensburg.** In an interval at **11.55,** Time and Weather. **1.0 p.m.,** Programme for Children. **1.35,** Fairy Tales. **2.0,** Kasper hört hell—Puppet Play in Eight Scenes. **3.0** (from **Hanover**), Recital on Two Pianofortes. **3.30,** Winter Joys—a Musical and Literary Sequence (arr. Hermann Quistorf and Thomas Westerich). **4.0,** Wind Instrument Concert, relayed from **Lubeck. 5.15,** Mensch aus Erde gemacht—Drama in Five Scenes (Friedrich Griese). **5.30,** Sports Talk: Good Umpires and Referees. **6.40,** Sports Report. **6.55,** Weather. **7.0,** Concert of Popular Italian Music by the Philharmonic Orchestra, conducted by Richard Richter, relayed from the Musikhalle. Soloist: Karl Günther (Songs); Overture, Tancred (Rossini); Aria from L'elisir d'amore (Donizetti); Ballet Music from William Tell (Rossini); Melodies from Cavalleria rusticana (Mascagni); Selection from Tosca (Puccini); Aria from I Pagliacci (Leoncavallo); Selection from The Barber of Seville (Rossini); Selection from La Traviata (Verdi); News in an interval. **9.0,** Time, Weather, News, Sports Notes and Police Report. **9.10,** Topical Talk. **9.40** (approx.). Dance Music from **Berlin (Witzleben).**

HANOVER.—See **Hamburg.**

HEILSBERG

276.5 metres; 60 kW; and **DANZIG, 453.2 metres.—10.30 a.m.,** Organ Recital on the occasion of the Dedication of the New Kemper Organ in the Evangelical Lutheran Church at Borchersdorf. **11.0,** Concert by the Königsberg Opera House Orchestra, conducted by Erich Seidler: Soloist: Eugenie Premyslav ('Cello). **1.0 p.m.,** Talk on Chess. **1.30,** Talk for Young People. **2.0** (from **Danzig**). Talk: Carnival Customs. **2.30,** Songs to the Lute. **3.0,** Concert of Light Music by the Little Orag Orchestra, conducted by Eugen Wilcken. Sports Notes in the interval. **4.50,** Talk on the Work of Max Beckmann in connection with the Exhibition from February 26th—March 27th. **5.10,** Reading from his own Works, by Hans Georg Buchholz. **5.30,** Coloratura Song Recital by Elisabeth Hallstein: Concert Aria: Schon lacht der holde Frühling (Mozart); Concert Aria: Ch'io mi scordi di te (Mozart); Aria from The Merry Wives of Windsor (Nicolai); Aria from The Tales of Hoffmann (Offenbach). **6.0,** Chamber Music by the Bruinier Quartet. String Quartet in C (Mozart); String Quartet in B Flat (Pfitzner). **7.0,** Sports Notes. **7.10,** Love in the Snow—Operetta in Three Acts (Benatzky). **9.10,** News and Sports Notes. **9.40** (approx.). Dance Music from **Berlin (Witzleben). 11.0** (approx.), Close Down.

HILVERSUM

(Announced **HUIZEN**), **296.1 metres;** 20 kW; (7 kW up to **4.40 p.m.**).—**9.25 a.m. to 4.40 p.m.,** Programme of the Catholic Radio Society (K.R.O.). **9.25,** Mass from the Church of the Holy Family at The Hague. **10.55,** Concert by the K.R.O. Orchestra, conducted by Johan Gerritsen. In the interval at **11.40,** Talk. **1.10 p.m.,** Talk: The Crisis. **1.40,** Religious Lesson. **2.10,** Concert by the Rostal String Quartet: String Quartet, Op. 127 (Beethoven); Death and the Maiden (Schubert). In the interval at **2.40,** Talk. **4.10,** Programme for Invalids. **4.40 to 7.25,** Programme of the Christian Radio Society (N.C.R.V.). **4.40,** Divine Service from a Church in Rotterdam. **6.25,** Sacred Music by a Mixed Vocal Quartet. **7.25,** till Close Down, K.R.O. Programme. **7.25,** Talk. **7.45,** Football Report. **7.50,** Concert by the K.R.O. Boys, conducted by P. Lustenhouwer. **8.40,** News Bulletin. **8.45,** Concert by the K.R.O. Orchestra, conducted by Johan Gerritsen: Overture, Donna Diana (Reznicek); Ballet Music from Idomeneus (Mozart); Selection from The Bartered Bride (Smetana); Overture, Genoveva (Schumann); Albumblatt (Schumann); Overture, William Tell (Rossini); March (Dubois); Selection from The Arabian Nights (Joh. Strauss). In the interval at **9.55,** News Bulletin. **10.20,** Epilogue. **10.40** (approx.). Close Down.

HORBY.—See **Stockholm.**

HUIZEN

Announced **HILVERSUM, 1,875 metres;** 8.5 kW.—**11.40 a.m. to 4.40 p.m.,** Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.). **11.40,** Time Signal. **11.41,** Concert by the Royal Military Band, conducted by Captain C. L. Walther Boer. March from Les Saltimbanques (Ganne); Norwegian Artists' Carnival (Svendsen); Selection from Carmen (Bizet); Gramophone Records; Danse macabre (Saint-Saëns); Piece (Schmitt); Symphonic Poem, Moldavia (Smetana); Gramophone Records; Ballet égyptien (Luigini); Selection from Lohengrin (Wagner). **1.40 p.m.,** Weekly Book Talk. **2.10,** Concert by the Concertgebouw Orchestra, conducted by Pierre Monteux, relayed from the Concertgebouw, Amsterdam. Soloist: François Lang (Pianoforte). **3.40,** Talk: Shaw's Play, The Doctor's Dilemma. **4.10,** Popular Music on Gramophone Records and Sports Notes. **4.40,** Programme of the Workers' Radio Society (V.A.R.A.). Programme for Children. **5.40 to 7.40,** Programme of the Liberal Protestant Radio Society (V.P.R.O.). **5.40,** Literary Talk. **6.25,** Divine Service, relayed from **Weesp. 7.40** till Close Down, A.V.R.O. Programme. **7.40,** Time, News and Sports Notes. **7.55,** Concert of Viennese Music by the Wireless Orchestra, conducted by Nico Treep. **8.40,** Recitations. **9.0,** Who's Voice is that—a Guessing Competition. **9.40,** Concert by the Wireless Orchestra, conducted by Nico Treep. **10.10,** Concert by Cornelius Codelhan and his Orchestra, relayed from the Carlton Hotel, Amsterdam. **10.40,** Concert by Kovacs Lajos and his Dance Band. **11.40** (approx.), Close Down.

INNSBRUCK.—See **Vienna.**

KALUNDBORG.—See **Copenhagen.**

KIEL.—See **Hamburg.**

KLAGENFURT.—See **Vienna.**

KOSICE.—See **Prague.**

LANGENBERG

473 metres; 60 kW.—**10.25 a.m.,** The World on Gramophone Records—People in Alsace. **11.0,** Talk on Music. **11.25,** Talk: The One Hundred and Twenty-fifth Anniversary of the Birth of Daumier. **11.45,** Talk: The Music of the Week. **12 Noon,** Concert, conducted by Eysoldt. **1.30 p.m.,** Shorthand Lesson. **1.50,** A Tale in Cologne Dialect. **2.20,** Talk: The Animal World—Sleep. **2.45,** Talk: Famous Germans—Ernst Moritz Arndt. **3.5,** Reading in Dialect. **3.25,** Running Commentary on the International Football Match, Belgium v. West Germany, from the Cologne Stadium. **3.50,** Concert, conducted by Wolf. **5.5,** Talk: Town and Country—The Small Town Stripped of its Charm. **5.30,** Talk: Musicians who died young—S. Kuhn. **6.0,** An Entertainment. **6.45,** Sports Notes. **7.0,** A Carnival Programme—The Station Orchestra, conducted by Kühn, the Little Radio Orchestra, conducted by Eysoldt. Soloists: Lisa Hettmann, Elsa Koelhaam (Soprano), and Leonardo Aramesco and Josef Schommer (Tenor). In the interval from **7.45 to 8.20,** Fools have not died out—Radio Play (Edmund Reinacher). Music by Hans Ehert). **9.5,** News and Sports Notes. **9.20,** Serenade on Gramophone Records. **9.45,** Dance Music from **Munich. 11.0** (approx.), Close Down.

LAUSANNE.—See **Radio-Suisse Romande.**

LEIPZIG

389.6 metres; 120 kW.; and **DRESDEN, 319 metres.—10.30 a.m.,** Herr Jesu Christ, wahr'r Mensch und Gott—Cantata (Bach); by the Municipal and Gewandhaus Orchestras, the Choir of St. Thomas', and Soloists. **11.10,** Centenary Concert of the German Booksellers' Union, relayed from the Booksellers' House. Music by the Gewandhaus Quartet. **11.45,** Concert from **Hamburg. 1.0 p.m.,** Weather and Time. **1.5,** Programme Announcements. **1.25,** Agricultural Hints. **1.35,** Esperanto Lesson. **2.0,** Concert of Chamber Music. **2.30,** Reading (Ludwig Finckh). **3.0,** Concert of Light Music by the Emdé Orchestra. **4.45,** Flucht im Kreise—Radio Play (Hans Natonek), with Music by the Emdé Orchestra. **6.15,** Demonstration arranged by the Saxon Branch of the Union for Germans Abroad, relayed from the Town Hall, Dresden, followed by Report on the Ski Championships at Rönnerstadt. **7.0,** Concert of Weber and Lortzing Music, by the Leipzig Symphony Orchestra, conducted by Willy Steffen. Soloists: Irma Beilke (Soprano), Hanns Fleischer (Tenor), and Kurt Böhme (Bass). Part I: Weber, Overture and Tenor Aria from Oberon; Bass and Soprano Arias from Der Freischütz; Soprano and Bass Duet and Overture from Euryanthe. Part II: Lortzing, Overture, Undine; Soprano Solo from Der Waffenschmied; Tenor and Bass Duet from Der Waffenschmied; Overture, Casanova; Soprano Aria and Soprano and Tenor Duet from Der Wildschütz; Overture, Der Wildschütz. In an interval at **8.45,** Topical Talk. **9.5,** News Bulletin. **9.40** (approx.), Dance Music from **Berlin (Witzleben). 11.0** (approx.), Close Down.

LINZ.—See **Vienna.**

LJUBLJANA

574.7 metres; 2.5 kW.—**4.0 p.m.,** Light Music. **7.0,** Song Recital by Mme. Pavla Lovse. **7.45,** Recitations. **8.15,** Programme of Waltzes. **9.0,** Time, News and Dance Music on Gramophone Records.

MADRID

ARANJUEZ (EAQ), 30.43 metres; 20 kW.—**10.30 p.m.,** Variety Music. **10.45,** Humorous Talk. **11.0,** Variety Music (contd.).

MADRID

UNION RADIO, Call EAJ7, 424.3 metres; 2 kW.—**8.0 to 9.0 a.m.,** Topical Review. **2.0 p.m.,** Chimes, Time, Theatre Notes and Concert by the Artys Orchestra. **4.0 to 7.0,** Interval. **7.0,** Chimes and Dance Music from the Ritz Hotel. **7.30,** Agricultural Talk, followed by Dance Music (contd.). **8.30 to 9.30,** Interval. **9.30,** Chimes, Time and Harpsichord Recital by Marcario Kastner, followed by Interlude by Ramon Gomez de la Serna and Tenor Song Recital by Woino-Wischnewsky. **12 Midnight,** Chimes and Close Down.

MALMO.—See **Stockholm.**

MILAN.—See **Turin.**

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—**6.0 p.m.,** See **Brno. 7.0** till Close Down, See **Prague. 10.35** (approx.), Close Down.

MOTALA.—See **Stockholm.**

MUHLACKER.—See **Stuttgart.**

MUNICH

533 metres; 60 kW. Relayed by **Augsburg** and **Kaiserslautern, 560 metres;** and **Nürnberg, 239 metres.—9.0 a.m.,** Organ Recital. **9.45,** Chimes from Our Lady's Church. **10.0,** South German Litersturel. **10.30,** See **Leipzig. 11.0,** Wind Instrument Concert. **12.5 p.m.,** Time, Weather and Programme Announcements. **12.15,** Agricultural Talk. **12.35,** Gramophone Concert of Popular Music, (arr. Q. Anders and H. Hunkele). **1.30,** Chess Talk. **2.15,** Orpheum 1890—a Bourgeois Ball. **3.10,** A Marionette Play for Children. **3.30,** Orchestral Concert, conducted by Erich Kloss, with Violin Solos. **4.40** (from **Nürnberg**). Talk by Kilian Schiefer. **5.0,** Der Drache vom Kockelsee—Comedy in Three Acts (Richard Manz). **6.30,** Weather and Sports Notes. **6.40,** Talk: General von Schlieffen. **7.5,** Concert by the Munich Philharmonic Orchestra and the Munich Choral Society, relayed from the Tonhalle: Don Quixote March (Rupprecht); Overture, La belle Hélène (Offenbach); Selection from Die Fledermaus (Joh. Strauss); Potpourri of Viennese Songs (Morena); Overture, Banditenstreiche (Suppé); Waltz for Choir and Orchestra, The Blue Danube (Joh. Strauss); Mazurka for Male Voice Choir and Orchestra, Die Zwiesel-Alm (Krettner); Potpourri of Rhenish Songs (Hanemann); Solinger (Blon). **9.0,** Talk: Riding, Rope, Dancing and other Dangerous Arts. **9.20,** Time, Weather, News and Sports Notes. **9.45,** Dance Music by Ludwig Wörthmüller and his Band. **11.0** (approx.), Close Down.

NAPLES.—See **Rome.**

NOTODDEN.—See **Oslo.**

OSLO

1,083 metres; 60 kW. Relayed by **Fredrikstad, 365.8 metres; Hamar, 574.7 metres; Notodden, 447.1 metres; Porsgrund, 463.2 metres; and Rjukan, 447.1 metres.—9.30 a.m.,** Divine Service, relayed from the Cathedral. **Trondheim (495.8 metres). 4.0 p.m.,** Instrumental Concert, relayed from the Continental Hotel. **4.45,** Festival Programme of the Royal Norwegian Scientific Society, relayed from **Trondheim. 6.0,** Recitations. **6.15,** Weather and News. **6.30,** Parliamentary Review. **7.0,** Time. **7.1,** Concert by the Station Orchestra, conducted by Hugo Kramm: Soloist: Henri Temianka (Violin): Serenade for Strings, Eine kleine Nachtmusik (Mozart); Concerto in E Minor for Violin and Orchestra (Mendelssohn); First Suite from L'Arlésienne (Bizet); Spanish Rhapsody (Chabrier). **8.10,** Talk on Alcohol. **8.40,** Weather and News. **9.0,** Topical Talk. **9.15,** Songs and Talk on the Week's Revue by Lykkemann. **9.45,** Dance Music in Gramophone Records. **11.0** (approx.), Close Down.

OSTERSUND.—See **Stockholm.**

PALERMO

542 metres; 3 kW.—**9.25 a.m.,** Bible Reading. **9.40,** Sacred Music. **10.5,** Talk: The Fruit and Vegetable Exhibition in Palermo. **11.45,** Giornale Radio. **12 Noon to 1.0 p.m.,** Light Music, relayed from the Olympia Tea Rooms. In an interval at **12.30,** Time, Announcements and Weather. **4.30 to 5.30,** Variety Concert. **7.0,** Dopolavoro Notes and Giornale Radio. **7.20,** Sports Notes. **7.30,** Time and Announcements. **7.45,** Symphony Music on Gramophone Records. **9.0,** Song Recital. In the Interval, Talk. **9.55,** News.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW.—Time Signals (on 2,650 metres) at **9.26 a.m.** and **10.26 p.m.** (Preliminary and

dot Signals). 12.30 p.m., Concert, relayed from Paris (Ecole Supérieure) (447.1 metres). 1.0 to 2.0, Concert by the Rex Orchestra. 5.45, Le Journal Parlé. 6.45, Programme for Children. 7.20, Weather Report. 7.30, Gramophone Concert of Popular Music. 9.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—9.45 a.m., Bible Reading. 10.0, News. 10.5, Sponsored Concert. 11.5, Film Stars—Sponsored Programme. 11.40, Sponsored Gramophone Concerts. 12.15 p.m., Sound Film Music. 12.45, Half-an-Hour of Fantasy by Paul Weill. 1.15, Interval. 1.30, Sponsored Programme. 2.0, Sponsored Concert. 2.30 to 6.45, Interval. 6.45, Journal Parlé. 6.50, Sports Notes. 7.0, Catholic Review. 7.30, Popular Music on Gramophone Records. 8.0, Sponsored Concert. 8.30, Interval. 8.45, Sponsored Concert with Gramophone Records. 10.30, News.

PARIS

RADIO PARIS. Call CFR, 1,725 metres; 75 kW.—7.45 a.m., Light Music on Gramophone Records. 8.0, Press Review and Weather. 8.30, Physical Culture. 10.0, Elementary Book-keeping Lesson. 10.20, Advanced Book-keeping Lesson. 10.40, Spanish Lesson. 11.30 to 12 noon, Programme in English by the I.B.C. Gramophone Records: Pack Payne's Memories, Part II, by Jack Payne and his Band, with Vocal Chorus; Charlie makes Whoopee, Part II, by Charlie Higgins (Comedian), assisted by Bert Bray; In a Year—in a Day, by The Three Ginz (Vocal Trio); Some of these Days, by Red (Pepper) Sam; Sandy, the Goalkeeper, Part I, by Sandy Powell (Comedian); Big Hits of Big Hits, Part I, by Bob and Alf Pearson; Brother, can you spare a Dime? by Chick Bullock; In a Persian Market (Ketelbey), by the Commodore Grand Orchestra, under the direction of Joseph Muscant. 12 noon, Religious Address. 12.20 p.m., Sacred Music on Gramophone Records. 12.30, Bibloquet as an Antiquarian. 12.45, Press Review, News and Weather. 1.0, Orchestral Concert. 1.30 to 3.30, Programme in English by the I.B.C. 1.30, Gramophone Records: Pink Elephants, by Guy Lombardo and his Royal Canadians; Just a little Home for the Old Folks, by Sam Browne; In the dim, dim Dawning, by Ozzie Nelson and his Orchestra; Somewhere the Sun is shining, by Norman Blair (Baritone); Brother, can you spare a Dime? by Bing Crosby; I may never pass your Way again, by James Melton (Tenor); Santa Lucia, by Galla-Rini (The Wizard of the

FEB. 26th SUNDAY *continued*

Accordion); Can't we meet again? by Jack Hylton and his Orchestra; What more can I ask? by Lew Stone and the Monseigneur Band; Young and Healthy, by Guy Lombardo and his Royal Canadians, with Bing Crosby; Japanese Sandman, by Wayne King and his Orchestra; Torna a Surriento, by Alfred Piccaver (Tenor); Second Serenade, by Alfred Campoli and his Salon Orchestra; Trees, by Donald Novis (Tenor); Please, by Harold Ramsey on the Mighty Wurlitzer Organ at the Granada Cinema, Tooting; Wheezy Anna, by Roy Fox and his Band; April Showers, by Al Jolson; Her Name is "Mary," by Roy Henderson (Baritone); Arm in Arm, by the Street Singer; My Highland Rose, by Sandy MacFarlane; On with the Motley, by Sydney Rayner (Tenor); 'Twas only a Summer Night's Dream, by Elsie Carlisle; Sing Guitar, by Pilar Arcos (Soprano); Sweethearts of Yesterday, Part I, by Jack Hylton and his Orchestra. 3.0, Variety Concert. 3.30, Orchestral Concert. 4.0 to 6.30, Programme in English by the I.B.C. 4.0, Tea-Time Variety Hour. Mr. S. H. C. Williams announcing. 5.0, Concert by Lad Gluskin and his Band: It's Hallelujah Time; Just an Echo in the Valley; Here's hoping; Sweet Muchacha; A little Street where old Friends meet; Hey, young Fellow. 5.0, Orchestral Concert. 5.30 to 6.30, Programme in English by the I.B.C. Variety Hour. Announcer: Mr. Glynne Williams, Foundation Member No. 20 of the International Broadcasting Club. 6.30, Orchestral Concert. 7.0 to 8.0, Programme in English by the I.B.C. Film Fans' Hour. Mr. S. H. C. Williams announcing. 8.0, Radio Paris Circus. 8.30, News, Sports Notes and Weather. 8.45, Music Hall Programme. In the interval at 9.15, Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW. Relayed by **W8XK** on **48.86 metres** and **25.27 metres.**—9.0 p.m., Orpheus Choir of Pittsburgh. 9.30, Vesper Services from Shadyside Presbyterian Church. 10.30, Pages of Romance, from **New York.** 11.0, Sealed Power, from **New York.** 11.30, Time Signal. 11.31, Weather Report. 11.32, Teaberry Sport Review. 11.37, Press News Reflet. 11.42, Strange Facts. 11.44, Temperature Report. 11.45, Programme to be announced. 12 Midnight, Time Signal and Westinghouse Concert. 12.30 to 3.45 a.m. (Monday), **New York** Relay. 12.30 a.m., Great Moments in History. 1.0, L'Heure Exquise. 1.30, Mexican Symphonic Marimba Orchestra. 2.0, Twenty Thousand Years in Sing Sing. 2.30, Walter Winchell. 2.45, Jubilo—Singer of the Lonesome Road. 3.0, D. W. Griffith's Hollywood. 3.15, Real Silk. 3.45, Programme to be announced. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.15, Press Last Minute News. 4.20, Alexander Roy (Tenor). 4.30, Jesse Crawford (Organist), from **New York.** 5.0, Time Signal and Goodnight.

PORSGRUND.—See **Oslo.**

PRAGUE

488.6 metres; 120 kW.—10.0 a.m., Concert of Old Czech Music by the Station Orchestra, conducted by Otakar Jeremiás. Soloist: Oldřich Kredba (Harpsichord). 11.0, Chimes from the Church of St. Loudmila, Kralovske-Vinohrady. 11.5, See **Brno.** 1.0, Agricultural Talk. 1.15, Talk: The Struggle against Infectious Diseases. 2.30, Running Commentary on the International Ice Hockey Championship, relayed from the Winter Stadium. 3.30, See **Bratislava.** 4.30, Talk: Carnival Time in Rio de Janeiro. 4.45, Light Music on Gramophone Records. 5.0, German Transmission: Folk Song Duets, arranged by Bruno Seidler-Winkler. 6.0, Chimes from the Church of St. Loudmila, Kralovske-Vinohrady. 6.1, See **Brno.** 7.0, Carnival Concert by the Conservatoire Students' Orchestra, conducted by Prof. Pavel Dedecek. Soloists: Julie Maxianova, Anezka Slavicka and Karel Votapek (Songs) and Oldřich Kredba (Harpsichord). 8.0, Time Signal. 8.1, Running Commentary on the International Ice Hockey Championship, relayed from the Winter Stadium. 8.30, Jazz on two Pianofortes by Erwin Schulhoff and O. Lettus. 9.0, Time Signal. 9.10, News Bulletin. 9.15, Running Commentary on the International Ice Hockey Championship, relayed from the Winter Stadium. 10.35 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW; **LAUSANNE, 680 metres;** and **GENEVA, 760 metres.**—9.0 a.m. (from **Neuchâtel**), Protestant Service. 10.0 (from **Lausanne**), Concert by Edouard Moser and his Orchestra. 11.0 (from **Lausanne**), Reading. 11.30, News and Weather. 11.40 (from **Lausanne**), Popular Music on Gramophone Records. 1.0 to 4.15, Interval. 4.15 (from **Geneva**), Pomme d' Api—Operetta (Offenbach). 5.0 to 5.30, Interval. 5.30 (from **Geneva**), Address: The Cares of this Life. 6.0 (from **Geneva**), Organ Recital by William Montillet, relayed from the Church of St. Joseph. 6.15 (from **Geneva**), Sports Notes and News. 7.0 (from **Lausanne**), Violin Recital by Madeleine Gonser. 7.30, Concert by the Radio Orchestra. 9.0, News and Weather Report. 9.15 (approx.), Close Down.

RJUKAN.—See **Oslo.**

ROME

Call 1RO; 441 metres; 50 kW. Relayed by **Naples, 319 metres;** and **2RO, 25.4 metres.**—9.10 a.m., News, Sports Notes, and Amusement Guide. 9.30, Agricultural Report. 9.45, Bible Reading. 10.0 to 11.0, and 11.30 to 1.30 p.m., See **Turin.** In the interval at 12 Noon, Time and Announcements. 2.45 (**Naples**), Programme for Children, followed by Weather and Sports Notes. 3.0, Football Report. 4.0, See **Turin.** 6.30, Football and other Sports Results, Announcements, and News. 7.0, Time and Announcements. 7.30, Sports Notes. 7.45, Les Brigands—Operetta in Three Acts (Offenbach). In the intervals: Talk and Theatre Notes. News after the Operetta.

SALZBURG.—See **Vienna.**

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 379.5 metres; 50 kW. Relayed at intervals by **W2XAF** on **31.48 metres;** and by **W2XAD** on **19.56 metres.**—7.0 p.m. to 2.30 a.m. (Monday) **New York** Relay. 7.0, International Radio Forum. 7.15, Clyde Doerr and his Saxophone Octet. 7.30, Moonshine and Honeysuckle. 8.0, Wayne King's Orchestra. 8.30, Hour of Worship. 12 Midnight, Harmonica Rascals. 12.15 a.m., Wheatena Ville. 12.30, House Sense Philosophy. 12.45, Smith Brothers Programme. 1.0, Chase and Sanborn Hour. 2.0, General Electric Sunday Circle Concerts. 2.30, American Album of Familiar Music and Programme Résumé.

SCHWEIZERISCHER LANDESSENDER

BEROMUNSTER; 459 metres; 60 kW.; **BASLE, 244.1 metres;** and **BERNE, 245.9 metres.**—9.0 a.m. (from **Zürich**), Protestant Address. 9.45 (from **Zürich**), Chamber Music Concert. 10.30 (from **Zürich**), Ernst Zahn reads from his own Works. 11.0, Concert by

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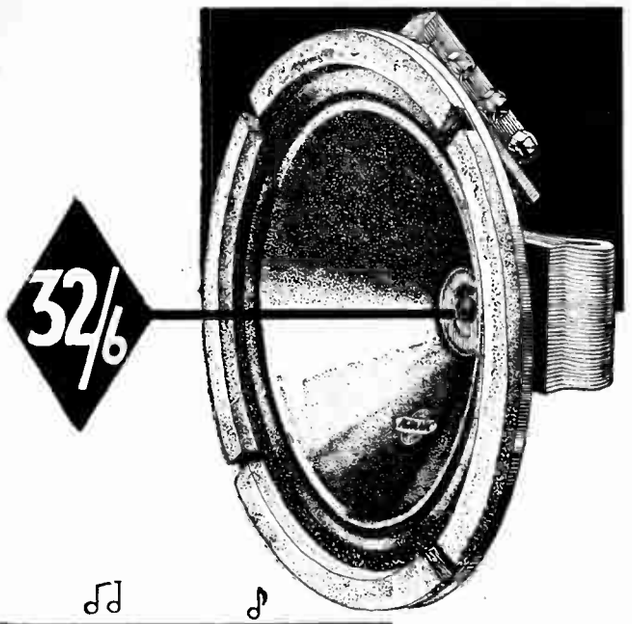

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CVS—65

FEB. 26th SUNDAY continued

the Radio Orchestra. **11.28,** Time and Weather. **11.30,** News Bulletin. **11.40,** Concert by the Radio Orchestra (contd.). **12.30 p.m.** (from **Zürich**), Rural Programme: Concert by a Children's Choir, and Agricultural Talk. **1.30 to 2.30 p.m.,** Interval. **2.30** (from **Zürich**), Concert by the Kollbrunn Male Voice Choir, conducted by Jakob Dubs. **4.0** (from **Basle**), Joseph—Oratorio (Händel), by the Basle Cathedral Choir, the Basle Orchestral Society, and Soloists. **6.0,** Time, Weather, and Sports Notes. **6.15** (from **Zürich**), Talk: A Philosophy for Everyday. **6.45,** Concert by the Radio Orchestra. **7.15** (from **Zürich**), Richard Wagner in Zürich—Radio Play (Welti and Walther). **7.45,** Concert by the Radio Orchestra. **8.30,** Weather and News. **8.40,** Concert of Old and New Dance Music by the Radio Orchestra. **9.15,** Sports Notes. **9.25** (approx.), Close Down.

SOTTENS.—See **Radio-Suisse Romande.**

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by **Boden, 1,229.5 metres; Göteborg, 322 metres; Horby, 257 metres; Motala, 1,348 metres; Ostersund, 770 metres;** and **Sundsvall, 542 metres.**—**10.0 a.m.,** Divine Service Relay. **11.45,** Weather and Ice Report. **12 Noon** Sports Notes. **3.30** (from **Sundsvall**), Programme for Children. **4.5,** Popular Music on Gramophone Records. **4.30,** Introductory Talk to the 7.35 p.m. Transmission. **5.0,** Evensong. **6.35** (from **Goteborg**), Pianoforte and Violin Recital by Carl Tillius and Bronislaw Gimpel. Pianoforte Solos: (a) Rhapsody in G Minor, Op. 79, No. 2 (Brahms). (b) Three Intermezzi, Op. 117 (Brahms); Violin Solo; Pianoforte Solo: Scherzo in E Flat Minor, Op. 4 (Brahms), **7.15,** La nouvelle idole—Play in Three Acts (François de Curel). **8.45,** Weather and News. **9.0,** Orchestral Concert: Overture, The Cunning Peasant (Dvořák); Waltz, Mefistos Höllenrute (Strauss); Selection from The Tales of Hoffmann (Offenbach); Tango, La Paloma (Lasso-Valerio); Waltz, Corinne (Möller); Selection from The Desert Song (Romberg). **10.0** (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—**9.30 a.m.,** Protestant Service, relayed from St. Paul's Church. **10.45,** Orchestral Concert, conducted by M. Grégoire. **11.30,** Catholic Service in French. **12 Noon,** Gramophone Concert of Popular Music. **12.45 p.m.,** News. **1.0,** Time. **1.1,** Gramophone Concert of Opera Music. **2.0,** Agricultural Talk in German. **2.15,** Talk in Dialect on Cycling **2.30 to 3.0,** Interval. **3.0,** Symphony Concert, relayed from the Conservatoire, **Paris. 5.15,** Concert of Sacred Music and Address, relayed from St. Paul's Church. **6.15,** Medical Talk in German. **6.30,** Sports Notes. **6.45,** Jazz Music by the Roskam Band. **7.30,** Time and News. **7.45,** Orchestral Concert, conducted by M. Roskam: Marche Chemriffante (Popy); Waltz, Carnival Visions (Petras); Der Rosenhochzeitszug (Jessel); Comedy Overture (Kéler-Béla); Guitare (Thomé); Selection from Dédé (Christiné). **8.20,** Lottery Results. **8.30,** Alsatian Carnival Programme. **10.30,** Dance Music, relayed from the Savoy. **12 Midnight** (approx.). Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and **FREIBURG, 570 metres.**—**10.30 a.m.,** See **Leipzig. 11.0** (from **Mannheim**), Concert by the Mannheim Philharmonic Orchestra, conducted by Hans Leger. **12 Noon,** Topical Talk. **12.15 p.m.,** Concert from **Langenberg. 1.0,** Report on the Ice Racing on the Titisee for Motor Cycles and Cars. **1.30,** Popular Music on Gramophone Records. **2.0,** Tempo-Tempo—Play for Children (Else Holle-Hellmund); Music by Gustav Gorlich. **3.0,** Swabian Folk Music by the Station Choir and Soloists. **3.55,** Military Band Concert, relayed from London. **5.0,** Talk: Michel de Montaigne on the Four Hundredth Anniversary of his Birth. **5.25,** Sports Notes. **5.40,** Vocal Quartet Concert: Waltz, Roses from the South (Joh. Strauss); Ein Walzerstrauss von Strausswalzern (arr. Nagler). **6.10,** Song Recital by Elly Neubeck. **6.30** till Close Down. See **Frankfurt.** In the interval at **9.0,** Time, News, Weather, Programme Announcements, and Sports Notes. **11.0** (approx.), Close Down.

SUNDSVALL.—See **Stockholm.**

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW. **12.15 p.m.,** News. **12.30,** Catholic Service. **1.0,** Orchestral Music. **1.15,** Songs from Opera. **1.40,** Agricultural Talk. **1.45,** Protestant Service. **2.15,** News. **2.20,** Symphony Concert. **3.0,** Chansonnettes. **3.15,** News and Horse Racing Results. **3.20,** Music by a Viennese Orchestra. **3.45,** Operetta Music. **4.0,** Orchestral Music. **4.15,** Racing Results and News. **4.20,** Bal Musette. **4.30,** Dance Music. **5.0,** Violin Solos. **5.15,** News and Racing Results. **5.20,** Opera Music. **5.45,** Popular Songs. **6.0,** News. **6.15,** Music by an Argentine Orchestra. **6.30 to 7.0,** Programme in English by the I.B.C. Concert of Dance Music. Fit as a Fiddle; Just a little Love; I'll follow you; Song; Roamin' for Romance; As you desire me; Try a little Tenderness; So ashamed; In the Shade of the Old Apple Tree. **7.0,** Extracts from Sound Films. **7.15,** News, Horse Racing Results and Market Prices. **7.25,** Local News. **7.30,** Orchestral Music. **8.0,** Opera Music. **8.15,** Military Music. **8.30,** Light Concert by a Viennese Orchestra. **9.0,** Viennese Music. **9.30,** Popular Melodies. **9.45,** Accordion Music. **10.0,** Concert for Listeners in Morocco. **10.15,** North African News. **10.30 to 12.0 Midnight,** Programme in English by the I.B.C. **10.30,** Concert of Light Music: Old Vienna Moon (Lehar); Duet, River stay 'way from my Door; Song, Killarney (Balfe); Choral Selection from H.M.S. Pinafore (Sullivan); Songs: (a) My old Irish Mother. (b) Roll on Mississippi, roll on; Selection from Congress Dances (Heymann). **11.0,** Song and Pianoforte Recital: Song of Songs (Moya); I feel you near me; Sally (Haines); Pianoforte Solo: Selection from White Horse Inn (Benatzky); Vienna, City of my Dreams; A Pair of Blue Eyes; Put your loving Arms around me; Pianoforte Solo Selection from Wonder Bar (Katscher). **11.30,** Popular Songs. Memories for the Fireside, Popular Melodies for Pianoforte; Plantation Songs; More Popular Melodies; More Memories for the Fireside. **11.57,** I.B.C. Good-night Melody. **12.0 Midnight,** Weather. **12.5 a.m. (Monday),** Dance Music. **12.15,** Orchestral Music. **12.30** (approx.), Close Down.

TRIESTE

247.7 metres; 10 kW.—**8.40 a.m.,** See **Turin. 8.55,** Mass from the Cathedral of San Giusto. **10.0 to 10.20,** Agricultural Hints. **11.0** till Close Down. See **Turin.**

TRONDHEIM.—See **Oslo.**

TURIN

273.7 metres; 7 kW. Relayed by **Milan, 331.5 metres; Genoa, 312.8 metres;** and **Florence, 500.8 metres.**—**8.40 to 8.55 a.m.,** Giornale Radio. **9.40,** Agricultural Talk. **10.0,** Mass from the Church of the Annunciation, Florence. **11.0 to 11.15,** Bible Reading. **11.30,** Orchestral Concert, conducted by Ugo Tansini. In the interval at **12.0** Noon, Time and Announcements. **12.30 to 1.30 p.m.,** Orchestral Concert. **2.30,** Gramophone Records of Light Music. **4.0,** Symphony Concert, conducted by W. Mengelberg. In the intervals, Giornale Radio, etc. **5.0,** Dopolavoro Notes. **6.5,** Variety Music on Gramophone Records. In the interval at **6.30,** Time and Announcements. **7.0,** Giornale Radio, Sports Notes and Gramophone Records (contd.). **8.0,** Variety Programme. **9.0,** Talk. **9.15,** Dance Music. **10.0,** Giornale Radio.

VIENNA

517 metres; 15 kW. Relayed by **Graz, 357.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 245.9 metres;** and **Salzburg, 218.5 metres.**—**10.30 a.m.,** Concert by the Vienna Symphony Orchestra, conducted by Theodor Christoph; Soloist: Josef Pembaur (Pianoforte). **11.40,** Orchestral Concert. **1.0 to 2.0 p.m.,** Interval. **2.0,** Time and Programme Announcements. **2.5,** Book Review. **2.30,** String Quartet in D Minor (H. Wolf). **3.15,** Talk on Squirrels. **3.45,** Orchestral Concert. Soloist: Ernst Arnold (Songs). **5.15,** Talk, with Gramophone Records: The Fiji Islands. **5.45,** Hans Sassmann reads from his own Works, with Introductory Talk by Erhard Buschbeck. **6.15,** Time, Programme Announcements, and Sports Notes. **6.25,** Max Oberleithner Song Recital by Georg Maikl (Tenor). **7.0,** Bunter Abend. **9.0,** News Bulletin. **9.15,** Report on the European Ice Hockey Championships, relayed from **Prague. 9.30,** Dance Music.

WARSAW

1,411 metres; 120 kW.—**10.58 a.m.,** Time Signal and Bugle Call from the Tower of St. Mary's Church, Cracow. **11.5,** Programme Announcements. **11.10,** Weather Forecast. **11.15,** Concert by the Philharmonic Orchestra, conducted by S. Latoszewski: Soloist: E. Szabranska (Mezzo-Soprano). In the interval, Talk. **1.0 p.m.,** Agricultural Talk. **1.20,** Concert from **Katowice (408 metres). 1.40,** Agricultural Talk. **2.0,** Concert (contd.). **3.0,** Programme for Young People. **3.25,** Light Music on Gramophone Records. **3.45,** Carnival Talk. **4.0,** Pianoforte Recital by Olga Hiewiecka. In the interval, Announcements. **6.0,** Miscellaneous Items. **6.25,** Variety Programme from **Lwow (381 metres). 7.0,** Violin Recital by Vasa Prihoda: La Folia (Corelli); Sérénade mélancolique (Tchaikovsky); Sonatina (Paganini-Prihoda); Romanza andaluza (Sarasate); Waltz (Vollmann-Prihoda); Jota Navarra (Sarasate). **8.0,** Pomeranian Programme. **9.0,** Sports Notes. **9.10,** Dance Music from the Café Italia. **9.55,** Aviation Weather Report and Police Notes. **10.0,** Dance Music from the Bodega Dance Hall.

ZURICH.—See **Schweizerischer Landessender.**

MONDAY

FEBRUARY THE TWENTY-SEVENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL	Band concert. Organ music. Orchestral programme. Sonata recital. Mr. Basil de Selincourt: New Books. B.B.C. chamber concert.
LONDON REGIONAL	Light Russian music for two pianofortes. Orchestral concert. "Tannhäuser and the Jockey Club," a play.
MIDLAND REGIONAL	Midland Counties programme: Leicestershire, inaugural remarks by Lieut.-Col. R. E. Martin. "The Pageant of Leicestershire," written by W. E. H. Allen.
NORTH REGIONAL	Orchestral concert. Marches of the Northern Regiments: Military Band programme. Mr. T. D. Barlow: "A Thing of Beauty."
WEST REGIONAL	Orchestral concert from National Museum of Wales. Welsh interlude.
SCOTTISH REGIONAL	Recital of gramophone records. Orchestral concert.
BELFAST	Light orchestral concert. "Rogues and Vagabonds," orchestral concert.

ABROAD

BUDAPEST	7.10 p.m. Concert conducted by Bernardino Molinari.
COPENHAGEN	8.5 p.m. Opera: "Fra Diavolo" (Auber), from the Royal Theatre.
RADIO-PARIS	8 p.m. Symphony concert, conducted by Eugène Bigot.
SOTTENS	7.30 p.m. Symphony concert, conducted by Ernest Ansermet.
STRASBOURG	8 p.m. Opera: "La Vanina," by Paul Bastide.

ATHLONE

413 metres; 60 kW.; and **CORK, 224.4 metres.**—**1.30 to 2.0 p.m.,** Time, Weather, Stock Report, and Popular Music on Gramophone Records. **6.0,** Variety Music on Gramophone Records. **6.15,** Programme for Children. **7.0,** Popular Music on Gramophone Records. **7.20,** News. **7.30,** Time. **7.31,** Gaelic Lesson. **7.45,** Talk on the Fattening of Poultry. **8.0,** Pianoforte Recital by Carl Hardebeck. **8.20,** Baritone Solos by A. Flanagan. **8.30,** John MacDonagh in Songs and Sketches. **9.30,** Irish Music by the Station Orchestra. **9.45,** Traditional Fiddle Music by P. O'Reilly. **10.0,** Orchestral Music. **10.30,** Time, News, Weather, and Close Down.

BARCELONA

RADIO-BARCELONA, Call EAJ1, 348.8 metres; 8 kW.—**6.0 p.m.,** Trio Concert. **7.0,** Request Gramophone Records. **7.20,** Sports Notes. **7.30,** Exchange Quotations and Talk by Artur Balot. **8.0,** Light Music on Gramophone Records and News. **9.0,** Chimes from the Cathedral, Weather Report, Exchange Quotations, and Market Prices. **9.5,** Humorous Review of the Week in Verse. **9.15,** Concert of Sardanas. **10.10,** Pianoforte and Harmonium Duets: Prelude Fugue and Variations (César Franck); Wedding March (Widor); Scherzo Capriccioso (Guilmant). **10.40,** String Quartet in G (Gretchaninov). **11.10,** Concert by the Station Orchestra: Overture, The Merry Wives of Windsor (Nicolai); Polonaise (Dvorak). **11.30,** Dance Music, relayed from the Excelsior Dance Hall. **12 Midnight** (approx.), Close Down.

BARI

269.8 metres; 20 kW.—**7.0 p.m.,** Agricultural Notes, Tourist Talk and Dopolavoro Notes. **7.20,** Giornale Radio and Weather. **7.30,** Time and Announcements. **7.45** (approx.), Concert by a Plucked String Quartet: Overture, Gli Orazii e Curiazii (Cimarosa); Fantasia, Omaggio a Trento (Sartori); Idyll, Fra l'ombre della pineta (Salvetti); Mandoline and Guitar: Lamento di un'anima (Bracco); Selection from Ernani (Verdi); A Sunny Morning: One-act Comedy (Quintero); Overture, San Giusto (Bottelli); Danza esotica (Mascagni); Selection from Lucia di Lammermoor (Donizetti); Gavotte (Alfieri). **9.55,** News.

BASLE. See **Schweizerischer Landessender.**

BELGRADE

430.4 metres; 2.8 kW.—**5.55 p.m.,** Time and Programme Announcements. **6.0,** Light Music on Gramophone Records. **6.30,** Pianoforte Recital by Ivanka Petrovic: Sonata pathétique (Beethoven); On Wings of Song (Mendelssohn); Une plaisanterie (Mussorgsky); Cubana (Falla). **7.0,** Programme relayed from **Zagreb (307 metres).** **9.0,** News, followed by Cigány Music from the Potrosacka Zadruga Restaurant.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW. **12.45 p.m.,** News Bulletin. **1.0,** Gramophone Concert from **Berlin (Witzleben).** **2.0,** Talk for Women: Making Cushions. **2.45,** Review of Books on Modern Russia. **3.0,** Educational Talk. **3.30,** Concert from **Berlin (Witzleben).** **4.10,** Talk: German Carnivals in Olden Times. **4.30,** Pianoforte Recital. Variations in F Minor (Haydn); Romance in A Flat (Mozart); Sonata in G (Mozart). **5.0,** Talk: Public Administration in Scandinavia. **5.30,** Making Music with Invisible Partners. **5.55,** Weather and Announcements. **6.0,** English Lesson. **6.30,** Poetry Reading. **6.35,** Concert from **Stuttgart.** **7.30,** Two Comedies: (a) The Egg in the Market-Place (Franz Poci). (b) The Cut-throat (Lopez de Vega). **8.15,** Carnival Programme from **Stuttgart.** **9.0,** Weather, News and Sports Notes. **9.45,** Weather Report for Shipping. **10.0,** Dance Music from **Berlin (Witzleben).** **11.0** approx.), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—**3.30 p.m.,** Concert of Light Music by Paul Martens and his Orchestra. Comedy Overture (Artok); Selection from Coppélia (Delibes); Concert, Waltz (Moskovsky); Selection from Die geschiedene Frau (Fall); Caprice (Dvorák); Volgaklänge (Martens); Coronation March from Die Folkunger (Kretschmar). **4.30,** Lotte Reiniger describes how she makes her silhouette Films. **4.50,** Talk: Old Sports Champions. **5.10,** Soprano Song Recital by Agnes Bonkowska. E se un giorno tornasse (Respighi); O del mio dolce ardor (Gluck); Admiration (Hüe); Wiegenlied (Richard Strauss); Ständchen (Richard Strauss). **5.30,** Richard Euringer reads from his own Works. **5.55,** The Witzleben Station informs its Listeners. . . . **6.0,** Talk: Herr Seldte, Minister of State. **6.10,** Carnival Programme on Gramophone Records. **6.55,** The Watchword. **7.0,** Reading: A History of Post-War Germany: Part II, Up to Stresemann's Death. **7.15,** Wind Instrument Concert by Johannes Fulsel and his Band. **8.0,** Werkverrat—Radio Play (Eugen Ortner). **9.30,** Weather, News and Sports Notes, followed by Dance Music by Bol Dauber and his Band, relayed from the Delphi-Palast. **11.0** (also relayed by **Zeesen on 31.38 metres**), Concert of Light Music by the Station Orchestra. Soloist: Erna Berger (Soprano). Overture, The Merry Wives of Windsor (Nicolai); Aria from The Merry Wives of Windsor (Nicolai); Sextet in F, Dorf, musikanten (Mozart); Waltz, Frühlingsstimmen (Johann Strauss); Kaiser-Walzer (Johann Strauss).

BERNE. See **Schweizerischer Landessender.**

BEROMUNSTER. — See **Schweizerischer Landessender.**

BODEN. See **Stockholm.**

BODO. See **Oslo.**

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—**7.30 p.m.,** News, Exchange, and Market Prices. **7.40,** Talk: Bordeaux a Century Ago. **7.55,** Lottery Results. **8.0,** Talk: Adopted Children. **8.15,** Chansons. **8.20,** News and Weather Forecast. **8.33,** Concert by the Station Symphony Orchestra. Soloists: M. Thomas Alcaide (Tenor) and Mlle. Bovy Forestier (Harp).

BRATISLAVA

279 metres; 14 kW.—**3.10 p.m.,** Concert by the Station Orchestra, conducted by F. Dyk: Overture, Figaro (Mozart); Overture, Così fan tutte (Mozart); Waltz (Marsik); Valse triste (Babinsky); March (Schor). **4.10,** See **Prague.** **4.50,** Light Music on Gramophone Records. **5.3,** Serenade, Op. 8 (Beethoven), by the Station String Trio. **6.0,** See **Prague.** **6.10,** Talk for Women. **6.25,** See **Prague.** **7.0,** Programme relayed from **Zagreb, 307 metres.** **7.40,** See **Brno.** **8.30,** See **Prague.** **10.15** (approx.), Close Down.

BREMEN. See **Hamburg.**

BRESLAU

325 metres; 60 kW; and **GLEIWITZ, 253 metres.**—**12 Noon,** See **Langenberg.** **12.45, p.m.,** Time, Weather, News, Exchange and Shipping Report. **1.0,** Radio Report from **Langenberg.** **2.0,** Sponsored Programme with Gramophone Records. **2.15,** Agricultural Prices. **2.30,** Review of Books about Hitler. **3.0,** Talk: Intellectual Achievements of Eastern Germany. **3.20,** Orchestral Concert, conducted by Max Kaden: Kosakenritt (Rassel); Overture, Poet and Peasant (Suppé); Rondino and Minuet (Beethoven); Second Peer Gynt Suite (Grieg); Kiss Waltz from Der lustige Krieg (Joh. Strauss); Concert Overture, My Home (Dvorák); Melody (Gillardini); Ballet Suite in Four Movements (Parés); Alexander-Marsch (Leonhardt); Potpourri for Jazz Orchestra (Golwyn); Intermezzo, Im Fürstensteiner Grund (Weigt); Dutch March (Leuschner). **4.30,** Agricultural Prices. **4.35,** Talk: 1933, Breslau's Blackest Year. **4.55,** Music Review. **5.15,** French Lesson. **5.40,** Programme to be Announced. **6.0,** Talk: Changes in Oratorical Style. **6.30,** Weather Forecast. **6.35,** Rose Monday Programme of Dance Music and Light Music by Sam Jackson and his Band. **7.30,** News. **7.40,** Six Carnival Farces (Kurt Schwabach and Bruno Balz), with Music by the Station Orchestra, conducted by Franz Marszalek: (a) The Importunate Customer, (b) The Dress. (c) Theo wants to go to the Carnival Ball alone, (d) Fräulein Mizzi has her Photograph taken, (e) Herr Bumke has to beat the Drum, (f) Cold Water or Aspirin? **8.40,** Time, Weather and News. **8.50,** Concert of Light Music and Dance Music by the Station Orchestra, conducted by Franz Marszalek, with Song Refrains by Robert Koppel. **10.0,** Sports Notes, Market Prices and Programme Announcements. **10.15,** Answers to Correspondents on Technical Questions. **10.30,** Dance Music relayed from the Dorchester Hotel, London. **12 Midnight** (approx.), Close Down.

BRNO

342 metres; 35 kW.—**4.40 p.m.,** Review of Books on Music. **5.3,** Talk: Gymnastics and Sports. **5.15,** See **Prague.** **5.25,** German Transmission: News, Elementary French Lesson, and Talk on Colonisation. **6.0,** see **Prague.** **6.10,** Talk. **7.0,** Yugoslavian Programme relayed from **Zagreb, 307 metres.** **7.40,** Concert by the Station Orchestra, conducted by Jan Janota: Overture The Merry Wives of Windsor (Nicolai); Scherzo from A Midsummer Night's Dream (Mendelssohn); Bacchanale from Tannhäuser (Wagner); Larghetto and Vivace from the Serenade for Strings (Dvorák); Polovtsian Dances from Prince Igor (Borodin). **8.30,** See **Prague.** **10.15** (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—**12 Noon,** Concert by the Small Station Orchestra, conducted by Pierre Leemans; Soloist: M. Wigy (Violin). **1.0,** Journal Parlé. **1.10,** Gramophone Concert: March Neptune (Ivory); The Gingerbread House (Ivory); Arlequin (Lalo); Selection from Hansel and Gretel (Humperdinck-Fried); Le dernier sommeil de la Vierge (Massenet); Minuet No. 1 (Paderewsky); Serenade (Schubert); Andante religioso (Thomé); Gnomenreigen (Liszt); Serenade (Moszkowsky); Pas des Echarpes (Chaminade); Overture, Stradella (Flotow). **2.0,** Educational Programme. **5.0,** Concert by the Belgium Wind Instrument Quintet: Quintet, Op. 16 (Beethoven); Quintet, Op. 75 (Delcroix). **6.0,** Talk: Jean Gaspar, a Belgian Sculptor. **6.15,** Debussy Pianoforte Recital by Oscar Delvigne: Arabesques in E and G; Mazurka; La plus que lente; Golliwog's Cak Walk; La cathédrale engloutie; General Lavine-Eccentric; Jardins sous la pluie. **6.45,** Au bal masqué—Sketch (Lanville). **7.0,** Gramophone Concert: Nocturne from Shylock (Fauré); Hymn to the Sun (Rimsky-Korsakov); Bohemian Dance (Smetana); Overture, El Guarany (Gomez). **7.15,** Talk on Flemish Literature. **7.30,** Theatre Notes and Film Review. **8.0,** Sonata for Flute and Strings (Scarlatti-Taillefere), on Gramophone Records. **8.15,** Britannicus—Tragedy in Five Acts (Racine). In the intervals, Gramophone Records: Melody (Lully); Gavotte (Lully); Pastorale and Capriccio (Scarlatti); Gigue in C (Scarlatti); La pantomime (Rameau); L'indiscrète (Rameau). **10.40** (approx.), Journal Parlé, followed by Request Gramophone Records: Omes-toi, Fêtons le printemps (Mambour); Songs from One Hour with you (Whiting): (a) What would you do? (b) Oh! that Mitzi. **11.0** (approx.), Close Down.

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW.—**12 Noon,** Gramophone Concert of Light Music. **1.0 p.m.,** Journal Parlé. **1.10,** Concert by the Small Station Orchestra, conducted by P. Leemans; Soloist: M. Donliez (Pianoforte): March (Lincke); Waltz, Un jour à Seville (Waldteufel); Marionettes on the Clock (Armandola); Potpourri, More Melodious Memories (Finck); Tarantella for Pianoforte (Chopin); Serenade (De Boeck); Potpourri of Popular Songs (Schneider). **2.0,** Programme for Schools. **5.0,** Gramophone Concert: Overture, Egmont (Beethoven); Four German Dances (Mozart); Navarra (Albeniz); Minuet (Mozart); Sierra Morena (Monasterio); Selection from Tannhäuser (Wagner); La Romanesca (arr. Achron); Offenbach Potpourri. **5.45,** Programme for Children. **6.30,** Concert by the Small Station Orchestra, conducted by P. Leemans: Overture, La finta giardiniera (Mozart); Introduction and Humoresque (d'Ambrosio); Andantino for 'Cello (Martini); Abendblatt (Wagner); Minuet (Fietter); Two Pieces (Albeniz): (a) Barcarolle. (b) Torre Bermeja; Zampognari (d'Indy); Dance Suite (Pierné). **7.15,** Medical Talk: The Treatment and Prevention of Rheumatism. **7.30,** Le Journal Parlé. **8.0,** Concert of Flemish Music by the Station Orchestra, conducted by A. Meulemans. **8.45,** Talk for Stamp Collectors. **9.0,** Orchestral Concert (contd.). **10.0,** Journal Parlé. **10.10,** Gramophone Concert: Overture, Die Fledermaus (Joh. Strauss); Waltz, Donausagen (Fucik); Selection from A Kiss in Spring (Kálmán); Waltz, Sphärenklänge (Jos. Strauss); Gavotte, Stephanie (Czibulka); Polka Mazurka from Der Bettelstudent (Millöcker); Selection from The Czarevitch (Lehar); Waltz, Hofballtänze (Lanner); Kleiner Wiener-Marsch (Kreisler). **11.0** (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—**3.0 p.m.,** Concert by the Station Orchestra: March (Fucik); Waltz, Dorfkinder (Kálmán); Oriental Suite, On the Banks of the Nile (Platen); Violin Solo: Mélodie enchanteresse (Ackermans); Oriental (Cui); Minuet in D (Brunetti); Boston Waltz from Roses from Florida (Fall). **5.0,** News and Time Signal. **5.10,** Talk. **5.25,** Concert (contd.): Berceuse and Canzonetta (Frimi); Concert Adagio (Nardini); Potpourri, Von Wien durch die Welt (Bruby); Dream Waltz (Meyer-Helmund); March, Zürich (Heusser). **6.0,** Talk on Romania: Her Metals. **6.40,** Light Music on Gramophone Records. **7.0,** Time Signal. **7.1,** Chamber Music: Quartet in A (Schumann); Trio for Violin, 'Cello, and Pianoforte (Gretchaninov). In the interval at **7.30,** Talk. **8.15,** Orchestral Concert, relayed from the Enesco Restaurant. **9.0,** News.

BUDAPEST

550 metres; 18.5 kW.—**4.0 p.m.,** Talk. **4.30,** Jazz Music by the Gyula Megyeri Band, relayed from the Dunapalota-Ritz Hotel. **5.0,** Talk. **5.20,** Cigány Music by the Arpad Toll Band. **6.30,** Feuilleton. **7.10,** Concert by the Philharmonic Orchestra, conducted by Bernardino Molinari, relayed from the Academy of Music: Concerto grosso (Corelli); Symphony in G (Haydn); Le pause del silenzio (Malipiero); Symphonic Poem, Le fontane di Roma (Respighi); Symphonic Poem, Don Juan (R. Strauss). **8.0,** Announcements. **8.5,** Gramophone Concert of Variety Music.

CASSEL. See **Frankfurt.**

COPENHAGEN

281 metres; 0.75 kW., and **KALUNDBORG, 1,153 metres;** 7.5 kW. **11.0 a.m.,** Time and Chimes from the Town Hall. **11.5,** String Ensemble Concert, conducted by Max Skalka, relayed from the Hotel d'Angleterre. **1.0 to 2.20,** Interval. **2.20,** Talk for the Housewife. **2.30,** Concert by Carl Rydahl's Instrumental Ensemble. Soloist: Helge Rungwald (Songs). Overture, The Black Domino (Auber); Waltz, Künstlerleben (Joh. Strauss); Selection from The Barber of Seville (Rossini); Minuet in E (Mozart); Aria (Gröndahl); Küssen ist keine Sünd from Bruder Straubinger (Eysler); Mazurka, La Czarine (Ganne); Songs: (a) Song from Tannhäuser (Wagner), (b) An einetière (Saint-Saëns), (c) Laengsel (Tofft), (d) I Krig (Tofft), (e) Vaagn af din Slummer (Heise); Waltz, Amelie (Lumbye); Fantasia on Danish National Melodies (Lanzky); Serenade (Gade); Celtic Dance (Bullard); Foxtrot from Countess Maritza (Kálmán); Crépuscule (Schröder); Polonaise from Les Millions d'Arlequin (Drigo). **4.40,** Exchange and Fish Market Prices. **4.50,** Talk on Nils Collet Vogt. **5.20,** English Lesson. **5.50,** Weather Forecast. **6.0,** News. **6.15,** Time Signal. **6.30,** Review of Politics for February. **7.0,** Chimes from the Town Hall. **7.5,** Carnival in Literature and Music. The Radio Orchestra, conducted by Emil Reesen. Overture, Le Carnaval romain (Berlioz); Humoresque, Carnival (Weiner); Car-

nival Poems (Holm); Carnival Suite (Lacôme). 7.50, Introductory Talk to the following Transmission. 8.5, Acts Two and Three of Fra Diavolo—Opera (Auber), relayed from the Royal Theatre. 9.40, News. 9.55, Dance Music from the Lodberg Restaurant. In the interval at 11.0, Time and Chimes from the Town Hall. 11.30 (approx.), Close Down.

CORK.—See **Athlone.**

DANZIG.—See **Heilsberg.**

DRESDEN.—See **Leipzig.**

FECAMP

225.9 metres; 10 kW.—**12 Noon,** Light Music on Gramophone Records. **12.30 p.m.,** News Bulletin. **12.45,** Music from Sound Films. **6.0 to 7.0 p.m.,** Programme in English by the I.B.C., C. Danvers Walker, R. Chene, B. McNabb, and W. Crofton Announcing. **6.0,** Orchestral Concert for Hasting Listeners: The Blue Danube (Strauss); The Wedding of the Rose (Jessel); Columbine (Garland); Down in the Forest (Landon Ronald); At the Convent Gate (Johnson); Ich liebe dich (Grieg); In Pierette's Garden (Brookes); Invitation to the Waltz. **6.30,** Military Band Concert for Eastbourne Listeners: La Grive (Cole); Viscount Nelson (Zehle); Ballad Memories (arr. Baynes); Pomp and Circumstance (Elgar); A Frangesa (Costa); New Colonial March (Hall); Selection from The Country Girl (Monckton); The Thunderer (Sousa). **7.0,** Local News and Light Music on Gramophone Records. **7.30,** Radio Gazette. **8.0,** The Listeners' Half-Hour and News. **8.30,** Dramatic Programme. **10.0** till Close Down, Programme in English by the I.B.C. **10.0,** Dance Music: For the love of Mike; Come and have a cuddle on the common; This is the day of days! On a cold and frosty morning; Honeymoon Love; Speedboat Bill; Just once for all time; The Pagan Serenade; Hold my hand; Roll on Mississippi; I've got a feeling; The lights of Paris; Miracle Melodies Selection; The same as we used to do; Blaze away; Sittin' on a rainbow. **11.0,** Musical Comedy Programme: Selection from The Maid of the Mountains (Fraser-Simson); Song, Live for to-day; Duet, Farewell; Songs: (a) My life is love, (b) A Bachelor gay, (c) Love will find a way; Duet, A Paradise for two. **11.30,** Songs: Song of other days; River stay 'way from my door; Shoo the doo-doo away; The Empire Parade; Song Memories; There's happiness over the hill; Going Home; Around the corner. **12 Midnight,** Variety Concert: Tan McTartan; The Polar Bear; A Yodelling Lullaby; Where rainbows rest; The Gondolier; The World snaps its fingers; Ha, Ha; Thinking of you; When baby cries for the moon. **12.30 a.m.** (Tuesday), Songs: The first weekend in June; I'm in the market for you; Sweet temptation; Orchestra, My sunshine is you; I fell for you; Just like in a story book; Who cares? Goodnight Sweetheart. **1.0,** Hawaiian Duets; Alma Mia; Bone Festa; Hawaiian Waltzes; O Sole Mio; Hawaiian Twilight; Sing something simple; Kamschanola; Three little words. **1.30,** Songs; Whoopee Medley; Exactly like you; I like to do things for you; My lover; Monte Carlo Medley; More than you know; Swingin' in a hammock; On the sunnyside of the street. **2.0,** Dance Music: Love is the sweetest thing; Good morning, Mr. Sun; I'll do my best to make you happy; The Voice in the old Village Choir; Smile and sing your cares away; The turning of the tide; Where the blue of the night meets the gold of the day; Day by day; Was that the human thing to do? Goodnight Vienna; She didn't say Yes; Five minutes to twelve; Snap your fingers, clap your hands; Somebody loves me; Snuggled on your shoulder; Majah-General Thing-a-me-bob. **2.57,** I.B.C. Good-night Melody. **3.0,** Close Down.

FLENSBURG.—See **Hamburg.**

FLORENCE.—See **Turin.**

FRANKFURT

259 metres; 17 kW.; and **CASSEL, 245.9 metres;** and **TRIER, 259.3 metres.**—**4.0,** See **Munich. 5.15,** Economic Notes. **5.25,** Astronomical Talk. **5.50,** English Lesson. **6.15,** Time, Programme Announcements, Weather, and Exchange. **6.30 to 9.0,** See **Stuttgart. 9.0,** Time, News, Weather, and Sports Notes. **9.45,** See **Stuttgart. 11.0,** Dance Music from **London. 12 Midnight** (approx.), Close Down.

FREDRIKSSTAD.—See **Oslo.**

FREIBURG.—See **Stuttgart.**

GENEVA.—See **Radio-Suisse Romande.**

GENOA.—See **Turin.**

GLEIWITZ.—See **Breslau.**

GOTEBORG.—See **Stockholm.**

GRAZ.—See **Vienna.**

HAMAR.—See **Oslo.**

HAMBURG

Call ha (in Morse), **372 metres;** 1.5 kW. Relayed by **Bremen, 264.8 metres; Flensburg, 227.4 metres; Hanover, 566 metres;** and **Kiel, 232.2 metres.**—**6.5 p.m.,** Franz Schauwecker reads from his own Works; Weather. **6.30,** Book Review. **7.0** (from **Hanover**). Concert by the Brunswick Landestheater Orchestra with Meta Hagedorn-Chevalley (Pianoforte); Bolero (Ravel); Pianoforte Concerto in D Minor (Brahms). **8.0,** News Bulletin. **8.10,** Jürgen Wullenwever; a Hanseatic Radio Play (Otto Anthes). **9.10,** Time, Weather, News, Sports Notes and Police Report. **9.20,** Topical Talk. **9.30,** Gramophone Concert: Overture, Martha (Flotow); Two Arias from Alessandro Stradella (Flotow); Second Finale from Aida (Verdi); Serenade (d'Ambrosio); Selection from The Queen of Spades (Tchaikovsky); Hungarian Rhapsody No. 2 (Liszt); Gipsy Melody (Colomba); Potpourri, Von Wien durch die Welt (Hruby); Gavotte (Thomas); Guitarrero (Drolla); Waltz: España (Waldteufel); March: Drunter und drüber (Freundorfer); Im Schwarzwald geht ein Mühlenrad (Rust); A Summer Day in the Alps (Charlie); Defiliermarsch (Faust). In an Interval at **9.50,** Ice Report.

HANOVER.—See **Hamburg.**

HEILSBERG

276.5 metres, 60 kW.; and **DANZIG, 453.2 metres.**—**12.5 to 1.30 p.m.,** Gramophone Concert: Overture, Egmont (Beethoven); Tenor Solos: (a) Aria from Il Trovatore (Verdi), (b) Song from Czar and Carpenter (Lortzing); Selection from Waltzes from Vienna (Strauss-Bittner-Korngold); Selection from Viktoria and her Hussar (Abraham); Sous les Ponts de Paris (Scotto); Amourense (Berger); Selection from Liselotte (Kinnecke); Two Pieces: (a) Heut' hab' ich Glück, (b) Arut (Knepler); Kleine Jeanne, Tenor Solos: (a) Berceuse from Jocelyn (Godard), (b) Extase (Gaune); Erinnerungen an Herkulesbad (Pazeller). In the interval at **12.20,** News. **2.0,** Exchange Quotations and Market Prices. **2.30,** Programme for Children. **3.0** (from **Danzig**), Concert by the Police Band, conducted by Ernst Stieberitz: March, Jugend voran! (Translateur); Selection from Mignon (Thomas); Serenade (Drigo); First Waltz Potpourri (Rohrecht); Selection from Orpheus in the Underworld (Offenbach); Overture, Das Modell (Suppé); Selection from The Mikado (Sullivan); Intermezzo, Nächtliche Runde (Urbach); National Songs in the Form of a Suite (Tchaikovsky); Waltz, Mein Lebenslauf ist Lieb und Lust (Jos. Strauss); Torch Dance of the Brides of Kashmir from Feramors (Rubinstein); Potpourri, Die Reise uf die Welt (Contadi); March, Entry of the Gladiators (Fucik). In the interval, Humorous Topical Review. **4.45,** Review of Books on Ski-ing. **5.15,** Market Prices. **5.20,** Ice Report. **5.30** (from **Danzig**), The Art of Engraving in Danzig Now and in the Past —a Radio Report from the Studio of Otto Wercham. **5.55,** Talk: Memorable Days of the Week. **6.5,** Paul Mittmann Recital by Helene Thiel (Soprano), Walter Schulz (Flute), Richard Knauer (Clarinet), and Karl Sinke (Pianoforte): Rhapsody for Flute and Pianoforte; Songs; Rhapsody for Clarinet and Pianforte. **6.30,** Elementary English Lesson. **7.0,** Weather and News. **7.10,** The Life and Death of the Great Singer, Enrico Caruso—a Radio Play (Günther Eich and Martin Raschke. **8.10** (from **Danzig**), Pianoforte Recital: Twenty-four Preludes Op. 28 (Chopin). **8.45,** Talk on General von Schlieffen for the Centenary of his Birth. **9.10,** Weather, News and Sports Notes.

HILVERSUM

Announced **HUIZEN; 296.1 metres;** 20 kW. (7kW. up to **4.40 p.m.**).—Programme of the Christian Radio Society (N.C.R.V.). **11.10,** Gramophone Concert of Popular Music. **11.40,** Police Notes. **11.55,** Gramophone Records of Variety Music. **12.10 p.m.,** Organ Recital from **Amsterdam. 1.40,** Talk for Schools. **2.15,** Songs with Harmonium and 'Cello accompaniment (on Gramophone Records). **2.25,** Talk on Cookery. **2.55,** Dressmaking Lesson. **3.25,** Programme to be announced. **3.40,** Religious Programme. **4.40** Trio Concert: Andante (Mozart); Overture, Il re pastore (Mozart); Nachruf an Mendelssohn (Schreiner); Roses from the South (Joh. Strauss); Potpourri, Schubertiana (Finck), on Gramophone Records; Potpourri of Tchaikovsky Music (Urbach) on Gramophone Records; Selection from Les Saltimbanques (Gaune); Potpourri, Von Gluck bis Wagner (Schreiner); Selection from The Bird Fancier (Zeller); Souvenir de Capri (Beece); Overture, Im Reiche des Indra (Lincke). **6.10,** Questions Time. **7.10,** Police Notes. **7.25,** News Bulletin. **7.40,** Gramophone Concert: Tenor Solo; Baritone Solo; Tenor Solo: All through the Night; Tenor Solos (St. Adams): (a) The Holy City, (b) The Star of Bethlehem; Choral Piece: Wilt heden nu treden; Contralto Solo: Largo (Handel); War March of the Priests, from Athalia (Mendelssohn); Selection from Aïda (Verdi); Overture, Light Cavalry (Suppé); Graf Zeppelin's Trip round the World (Männeke); Slav March (Tchaikovsky). **8.40,** Talk: Art and Education. **9.10,** Organ Recital. **10.10,** News Bulletin. **10.20,** Gramophone Concert of Brahms Music and Sacred Music. **11.10** (approx.), Close Down.

HORBY.—See **Stockholm.**

HUIZEN

Announced **HILVERSUM, 1,875 metres;** 8.5 kW. Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.).—**10.40 a.m.,** Organ and Song Recital by Valentijn Schoonderbeek and J. van Kempen (Tenor). Organ Solo: Prelude and Fugue in G (Buxtehude). Songs: (a) Recitative and Aria from The Pearl Fishers (Bizet), (b) Le secret (Fauré), (c) Pensee d'automne (Massenet). Organ Solo: Gloria from the Organ Mass, Op. 59 (Reger). Songs: (a) Vespergesang (arr. Kämpf), (b) Stille Tränen (Zann), (c) Daheim (Schumann); Fantasia in G (Bach). **11.40,** Time and Light Music by the Rentmeester Ensemble. **1.55 p.m.,** Interval. **2.10,** Talk. **2.40,** Variety Music on Gramophone Records. **3.40,** Talk on Saint-Saëns, illustrated with Gramophone Records. **4.40,** Dance Music by the Kovacs Lajos Band. **6.40,** Book Review. **7.10,** Dance Music (contd.). **7.40,** Time, Weather and News. **7.45,** Concert by the Wireless Orchestra, conducted by Albert van Raalte. Soloists: Yvonne Brothier (Songs) and André Gertler (Violin); Gli Uccelli (Respighi); Arias from (a) Le pré aux clercs (Hérold), (b) Le postillon de Longjumeau (Adam); Overture, Fra Diavolo (Auber); Aria from The Black Domino (Auber); Aria from Dinorah (Meyerbeer); Overture, Le nouveau Seigneur du Village (Boieldieu). **8.40,** Talk by D. Hillen. **9.0,** Orchestral Concert (contd.): Concerto in G for Violin and Orchestra (Mozart); Gramophone Records; Overture, Le roi l'a dit (Delibes); Arias from (a) Philemon et Baucis (Gounod), (b) Le roi malgré lui (Chabrier), (c) Isoline (Messager); Concert Waltz (Glaznnov). **10.10,** Variety Music on Gramophone Records. **10.40,** Weather and News. **10.50,** Concert by Jack and Mitchell's International Band from La Gaité Cabaret, Amsterdam. **11.40** (approx.), Close Down.

INNSBRUCK.—See **Vienna.**

KALUNDBORG.—See **Copenhagen.**

KATOWICE

408 metres; 16 kW.—**6.15 p.m.,** Announcements and Popular Music on Gramophone Records. **6.30,** See **Warsaw. 9.0,** The Letter Box. **9.20,** Dance Music.

KIEL. See **Hamburg.**

KLAGENFURT. See **Vienna.**

KOSICE.—See **Prague.**

LAHTI

1,796 metres, 40 kW.; and **HELSINKI, 368.1 metres.**—**4.0 p.m.,** Violin Recital by Sven Johansson: Meditation (Massenet); Tyrolese Dance (Seybold); Hymn to the Sun (Rimsky-Korsakov-Kreisler); Waltz, No. 2 (Weber-Burmester); Melody (Smetana). **4.20,** German Lesson. **5.15,** Agricultural Talk. **5.25,** Talk. **5.50,** Carnival Programme arranged by Students. **7.45,** News in Finnish. **8.0,** News in Swedish.

LANGENBERG

473 metres; 60 kW.—**12 Noon to 2.15 p.m.,** Relay of the Rose Monday Procession from **Cologne. 12 Noon,** Concert by the Düsseldorf Symphony Orchestra, relayed from the Beach-Saal, **Düsseldorf.** Conductor: Dr. Hans Paulig: Neuer rheinischer Büttenmarsch (Blankenburg); Lasst uns froh und munter sein—Potpourri of Rhenish Carnival Melodies (Neuhausen); Paso doble, Ins blaue Leben (Erwin); Selection from Wild Violets (Stolz); Foxtrot from Und es leuchtet die Peszta (Binder); Tango, Wenn man sein Herz verliert (Stransky); Foxtrot from Bali im Savoy (Abraham). **12.45,** A Report on the Rose Monday Procession. **2.20,** Meat Market Prices. **2.30,** Exchange and Time Signal. **2.50,** Programme for Children. **3.20,** The Nürnberg Cloth Workers' Carnival Play—a Radio Play for Young People. **4.0,** See **Munich. 5.20,** Talk for Parents. **5.45,** Weather, Time, Exchange, and Sports Notes. **6.0,** Talk for Women. **6.20,** Talk: Great Men of German History—Count Alfred von Schlieffen, on the Centenary of his Birth. **6.45,** Reading from Unpublished Poems—The Works of Horse Lange. **6.55,** First General News. **7.0,** Rose Monday Concert by the Station Orchestra, conducted by Kühn. **9.5,** News and Sports Notes. **9.30,** Serenade and Dance Music, conducted by Eysoldt. **11.0** (approx.), Close Down.

LAUSANNE.—See **Radio-Suisse Romande.**

LEIPZIG

389.6 metres; 120 kW.; and **DRESDEN, 319 metres.**—**12.15 p.m.,** Concert and relay of Carnival Procession from **Langenberg,** followed by Exchange. **2.20,** Advice for the Unemployed. **2.35,** Exchange and Market Prices. **3.0,** Ohne Geld ein Faschingsheld (A Penniless Carnival Hero)—Monologue (Anton Schnack). **3.20,** Art and Film Review. **3.30,** Concert by the Dresden Philharmonic Orchestra. **4.45,** Weather and Time. **4.50,** Exchange Quotations. **5.0,** Talk: Why still teach Greek and Latin in the Secondary Schools? **5.30,** Talk: A Thousand Years of German Literature—the Birth of the Novel. **5.50,** Programme to be announced. **6.0,** Vogtland and Erzgebirge Folk Music on Two Zithers. **6.30,** Talk: Richard Wagner in the Judgment of his Contemporaries. **7.0,** Concert by the Leipzig Symphony Orchestra and the Riedel Choral Society, conducted by Carl Schuricht. Soloist: Hermann Schey (Baritone). Symphony in G, No. 88 (Haydn); Sea Drift (Delius), for Baritone, Mixed Choir and Orchestra. **8.10,** News Bulletin. **8.20,** Cabaret Programme by Robert Koppel. **9.15,** News. **9.30,** Carnival—Humoresques (Robert Storm Petersen). **10.0,** Programme from **Langenberg. 11.0** (approx.), Close Down.

LINZ.—See **Vienna.**

LJUBLJANA

574.7 metres; 2.5 kW.—**6.0 p.m.,** Serbo-Croat Lesson. **6.30,** Talk on Hygiene. **7.0,** Programme relayed from **Zagreb (307 metres). 9.0,** Time, News, and Popular Music from Gramophone Records.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—**7.30 p.m.,** Radio Gazette for Lyons and the South-East. **8.30,** Concert, conducted by Charles Stroesy. Soloists: M. Lavandier (Pianoforte), M. Gonzalès (Violin), and Valentine Torcet (Songs). After the Concert, News Bulletin.

MADRID

ARANJUEZ (EAQ), 30.43 metres; 20 kW.—Programme arranged by the Spanish-American Radio Society on the Anniversary of the Independence of the San Domingo Republic. **10.30,** Popular Concert. **10.45,** Radio Chronicle. **11.0,** Popular Concert (contd.). **11.45,** Sports and Bull-fighting Notes. **11.40,** Light Music. **12 Midnight** (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 424.3 metres; 2 kW.—**7.0 p.m.,** Chimes, Exchange and Request Gramophone Records. **8.15,** News Bulletin. **8.30** (approx.), Close Down.

MALMO.—See **Stockholm.**

MILAN.—See **Turin.**

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—**5.25 p.m.,** German Transmission: Talk on Gipsies and Technical Talk. **6.0,** See **Prague. 7.40,** Military Band Concert, conducted by V. Karel. **8.30,** See **Prague. 10.15** (approx.), Close Down.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—**4.30 p.m.,** Literary Programme. **5.30,** Concert from the Conservatoire. **8.0,** Talk in English: The Doctrines of Marx and Lenin.

MOTALA. See **Stockholm.**

MUHLACKER.—See **Stuttgart.**

MUNICH

533 metres; 60 kW. Relayed by **Augsburg** and **Kaiserslautern, 560 metres;** and **Nürnberg, 239 metres. 4.0 p.m.,** Orchestral Concert, conducted by Erich Kloss: Jubel Overture (Flotow); Tanz der Gespielinnen and Zauberwalzer from the Ballet Der Zaubergeiger (Grimm); Selection from La Bohème (Puccini); A la Gavotte (Schütt); Suite No. 2 (Micheli); Gipsy Song, Debrecz (Meisel); Dance of the Chickens coming out of their Shells (Mussorgsky); In the Poultry-Yard (Bortkiewicz). **5.15,** Talk: Black Monday. **5.35,** Talk for Workers. **5.55,** Time, Weather and Agricultural Notes. **6.0,** Carnival Acrobatics on Two Pianofortes, by Ludwig Schmidkusche, with René Maquis (Saxophone). **6.35,** Talk: Voyages in a Sailing Vessel. **7.0,** Countess Maritza—Operetta in Three Acts (Kálmán). **9.20,** Time, Weather, News and Sports Notes. **9.40,** Light Music on Gramophone Records. **10.30,** Dance Music by Ambrose and His Band, relayed from **London. 12 Midnight** (approx.), Close Down.

NAPLES.—See **Rome.**

NOTODDEN.—See **Oslo.**

OSLO

1,083 metres; 60 kW. Relayed by **Fredrikstad, 365.8 metres; Hamar, 574.7 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres;** and **Rjukan, 447.1 metres.**—**4.0 p.m.,** Concert by the Radio Ensemble, conducted by Oscar Gustavson. **5.0,** German Lesson. **5.30,** Theatre Review. **6.0,** Announcements, Weather and News. **6.30,** Agricultural Talk. **7.0,** Time. **7.1,** A Childhood Friend—Play (Nils Collett Vogt). **8.10,** Political Review. **8.40,** Weather and News. **9.0,** Topical Talk. **9.15,** Violin Recital by Henri Temianka. **9.45** (approx.), Close Down.

OSTERSUND. See **Stockholm.**

PALERMO

542 metres; 3 kW.—**7.0 p.m,** Dopolavoro Notes, Tourist Talk, Agricultural Notes and Giornale Radio. **7.20,** Popular Music on Gramophone Records. In an interval at **7.30,** Time and Announcements. **7.45,** Concert of Chamber Music: Lea Mulè (Pianoforte), Diamante (Flute), Gallesi (Oboe), La Rosa Parodi (Pianoforte), and Sylvia De Lisi and S. Delisi (Sopranos): Pianoforte Sonata in G Minor (schumann); Concerto in C Minor for Flute, Oboe, and Pianoforte (Bach). Soprano Solos: (a) Amarilli (Sacchini), (b) Vergebliches Ständchen (Brahms). Flute Solo: Pastorale (Scarlatti). Oboe Solo: Allegro from Scottish Scenes (Godard). Soprano Solos: (a) Aria from Turandot (Puccini), (b) Maria's Romance from I compagnacci (Ricciteli). Pastorale and Harlequinade for Flute, Oboe, and Pianoforte (Goossens). Pianoforte Solo: Alborada del gracioso (Ravel). After the Concert, Light Music on Gramophone Records. **9.55,** News.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 9.26 a.m. and 10.26 p.m. (Preliminary and six-dot Signals).—5.45 p.m., Le Journal Parlé. 7.20, Weather Report. 7.30, Planquette Operetta Programme: Songs from Les Cloches de Corneville and Rip van Winkle. 8.30, Variety Programme. 9.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—6.45 p.m., Le Journal Parlé. 7.0, Hot Jazz on Gramophone Records. 7.30, Variety Music on Gramophone Records. 8.0, Talk by Dr. Ombredane. 8.5, Talk on Motor Cars. 8.15, Interval. 8.30, Sponsored Concerts. 10.40, News.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Probable Relay of the Test Match from Australia. 8.0, Press Review and Weather. 8.30, Test Match Relay (contd.). 12 Noon, Concert of Opera Music by the Radio Paris Orchestra: Overture, Der Freischütz (Weber); Selection from La Gioconda (Ponchielli); Gramophone Records: Two Arias from The Magic Flute (Mozart); Selection from Hulda (Franck); Ballet Music from Etienne Marcel (Saint-Saëns); Selection from Hamlet (Thomas); Selection from Bacchus (Massenet); Gramophone Records: Two Arias from Le Cid (Massenet); Ballet Music from Naïla (Gaubert). In the intervals at 1.0, Exchange, News, and Weather, and at 1.30, Exchange. 2.0, Exchange and Announcements. 3.45, Exchange and Market Prices. 6.10, Agricultural Report. 6.30, Elementary English Lesson. 6.50, Film Review: The Music Hall on the Screen. 7.0, Review of New Books. 7.20, Concert by the Radio Paris Orchestra: Bourrée (Février); Two Symphonic Tableaux (Fievet); Ronde des Lutins (Nerini); Marche des petits soldats de plomb (Pierné). 7.45, Commercial Prices and News. 7.50, Gardening Talk. 8.0, Symphony Concert, conducted by Eugène Bigot: Soloist: Bernard Michelin ('Cello); Ouverture pour un conte (Emmanuel); Concerto for 'Cello and Orchestra (Haydn); Prelude to L'Ouragan (Bruneau); Les Eolides (Franck); Second Symphony (Rabaud); Invitation to the Waltz (Weber). In the intervals at 8.30, News and Weather, at 8.40, Review by Reboux, and at 9.15, Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW. Relayed by **W8XK** on **48.86 metres** and **25.27 metres**;—9.0 p.m., Work-a-day Thoughts. 9.5, Business News. 9.15, Programme to be announced. 9.30, Weather Report. 9.32, Market Report. 9.45, Pianoforte Interlude. 9.50, David Lawrence Dispatch. 9.55, KDKA Artist Bulletin. 9.57, Programme Announcements. 10.0, Programme to be announced. 10.30, The Singing Lady from **New York.** 10.45, Little Orphan Annie. 11.0, Booth Tarkington's Maude and Cousin Bill, from **New York.** 11.15, Time Signal. 11.16, Temperature Report. 11.17, Teaberry Sport Review. 11.22, Press News Reeler. 11.27, Strange Facts. 11.29, Weather Report. 11.30, Westinghouse Watchmen. 11.45 to 3.15 a.m. **(Tuesday), New York** Relay. 11.45, Today's News by Lowell Thomas. 12 **Midnight,** Pepsodent Amos 'n' Andy. 12.15 a.m., Tastycast Jesters. 12.30, Five Star Theatre: Marx Brothers. 1.0, Cliquot Club Eskimos. 1.30, Time Signal and Don Carney: A Talk for Dog Lovers. 1.45, Phillips Lord in The Country Doctor. 2.0, Sinclair Minstrels. 2.30, Jack Frost Melody Moments. 3.0, The Sizzlers. 3.15, Bridge School of the Air, by E. Hall Downes. 3.30, Samuel Di Primio (Tenor). 3.45, Bradley Kincaid. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.13 KDKA Artist Bulletin. 4.15, Press Last Minute News. 4.20, Smith Ballew and his Orchestra. 5.0, Hotel Bismarck Orchestra, from **New York.** 5.30, Time Signal and Goodnight.

PORSGRUND.—See **Oslo.**

PRAGUE

488.6 metres; 120 kW.—3.10 p.m., See **Bratislava.** 4.10, Talk: The Organisation of Armies Now and in the Past. 4.20, Talk. 4.30, Programme for Children. 4.50, Variety Music on Gramophone Records. 5.5, Agricultural Talk. 5.15, Talk for Workers. 5.25, News in German. 5.30, German Transmission: Literary Talk. 6.0, Chimes from the Church of St. Loudmila, Kralovske-Vinohrady. 6.1, News. 6.10, Elementary English Lesson. 6.25, Talk on Economics. 6.40, Concert by a Chromatic Accordion Quartet. 7.0, Concert of Yugoslav Songs, relayed from **Zagreb (307 metres).** 7.40, See **Brno.** In the interval at 8.0, Time Signal. 8.30, String Quartet, Op. 24 (Skroup), by the Ondricek Quartet. 9.0, Time Signal. 9.1, News Bulletin. 9.15, Concert of Contemporary Music, conducted by Otakar Jeremias. Soloists: Vaclav Smetacek (Oboe) and Bohus Heran ('Cello). 10.15 (approx.), Close Down.

FEB. 27th MONDAY *continued*

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; **LAUSANNE, 680 metres;** and **GENEVA, 760 metres.**—5.30 p.m. (from **Lausanne**), German Lesson. 6.0 (from **Lausanne**), Weather and News. 6.30, Lesson for Cabinet-makers. 7.0 (from **Lausanne**), Talk: Automobile Traffic. 7.15 (from **Lausanne**), Talk on the following Transmission. 7.30, Symphony Concert by the Radio Orchestra, conducted by E. Ansermet. Soloist: E. Appia (Violin). Suite in D, No. 3 (Bach); Divertissement for Violin (Mozart); Second Symphony in C (Schumann). In the interval at 8.20, News and Weather. 9.15 (from **Geneva**), Talk: The Work of the League of Nations. 9.30 (approx.), Close Down.

REYKJAVIK

1,200 metres; 21 kW.—8.30 p.m., Weather Report. 8.40, Musical Programme and Announcements. 9.0, Chimes. 9.2, News Bulletin. 9.30, Reading. 10.0, Popular Concert by the Station Quartet, with Songs.

RIGA

525 metres; 15 kW.—6.5 p.m., Concert by a String Orchestra. 7.0, News Bulletin. 7.20, Soprano Songs by Milda Brechmanis-Stengels. 7.40, Popular Concert conducted by J. Medins. 8.0, Weather and News. 8.30, Light Music. 9.30 (approx), Close Down.

RJUKAN.—See **Oslo.**

ROME

Call 1RO; 441 metres; 50 kW. Relayed by **Naples, 319 metres;** and **2RO, 25.4 metres.**—7.0 a.m., Gymnastics. 7.15 to 7.30, Giornale Radio and Announcements. 11.30, Weather and Popular Music on Gramophone Records. 12 Noon, Time and Announcements. 12.2 to 1.15 p.m., Orchestral Concert from **Turin.** In the interval from 12.30 to 12.45, Giornale Radio and Exchange. 3.45, Children's Radio Review. 4.10, Announcements. 4.15, Exchange and Giornale Radio. 4.30, Violin Recital by Orlando Barera, relayed from the Royal Philharmonic Academy. 6.10 (**Naples**), Shipping and Sports Notes. 6.15, Agricultural Report and Announcements. 6.20, Giornale Radio. 7.0, Time, Announcements, and Light Music on Gramophone Records. 7.30, Sports Notes and Tourist Report. 7.45, Concert of Light Music. Part I. Two Pieces for Soloists and Chorus: (a) A' sirena (Valente), (b) Tarantellnccia (Falvo); Tenor Solos: (a) Tu ca non chiagne (de Curtis), (b) Filimè (Ricciardi), (c) Nuttatta 'e sentimento (Capolongo); Tenor Solos, with Chorus: (a) E' bersagliere (Di Capua), (b) Desiderio 'e te (Ricciardi), (c) Luna nova (Costa); Era di maggio (Costa); Sotto l'Ombrello (Di Capua); E' spingole francese (De Leva); Scetate (Costa); Pecchè (Pennino); Nuttata a mare (Di Capua); Choral Pieces: (a) Carmela, (de Curtis), (b) Pusilleco addiruso (Gambardella); Talk. Part II: Songs of the Moment. Orchestra: L'amore cos'è? (Raimondi); Song (Brodsky); Rose (d'Anzi); Canta Siviglia (Fiasconaro); Spanish Duet: Aromito (Pirena); Orchestra: Henriette (Bootz); Amore di bambole (Luddi); Berrettino (Mascheroni); Kiss me (Fokringer); Shadows (Caslar); Orchestra: The Cuckoo (Bengson). 9.55, News Bulletin.

SALZBURG.—See **Vienna.**

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 379.5 metres; 50 kW. Relayed at intervals by **W2XAF** on **31.48 metres,** and by **W2XAD** on **19.56 metres.**—7.30 p.m., Revolving Stage, from **New York.** 8.0, Olson Instrumental Trio. 8.15, Antoinette Halstead (Contralto). 12 **Midnight,** Gruen and Hall, from **New York.** 12.15 a.m. **(Tuesday),** Stock Reports. 12.30, to 2.30, **New York** Relay. 12.30, Van and Don. 12.45, The Goldbergs. 1.0, Sorony-land Sketches. 1.30, Voice of Firestone. 2.0, A. and P. Gipsies. 2.30, Buick Programme: Paul Whiteman's Orchestra, followed by Programme Resumé.

SCHWEIZERISCHER LANDESSENDER

BEROMUNSTER; 459 metres; 80 kW.: **BASLE, 244.1 metres;** and **BERNE, 245.9 metres.**—9.20 a.m. (from **Basle**), Broadcast for Schools. 9.50 to 11.28, Interval. 11.28, Time Signal from Neuchâtel Observatory. 11.30, Weather and News. 11.40, Sound Film Music on Gramophone Records. 12.35 p.m., Weather and Exchange. 12.45 to 2.30, Interval. 2.30, Concert by the Radio Orchestra. 3.0, Hungarian Music by the Basle Radio Quartet. Soloist, Alexander Fenyvess (Baritone). 4.0, Gramophone Dance Music. 4.30, Weather. 4.35 to 5.30, Interval. 5.30 (from **Zürich**), Talk: Everyday Philosophy. 6.0, Time and Weather. 6.15 (from **Zürich**), Elementary English Lesson. 6.45 (from **Berne**), Talk on the following Transmission. 7.0 (from **Berne**), Symphony Concert by the Berne Music Society, conducted by Dr. Fritz Brun. Soloists: Ria Ginster (Soprano) and Lorenz Lehr ('Cello). 9.0 (approx.), Weather, News, and Close Down.

SOTTENS.—See **Radio-Suisse Romande.**

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by **Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,348 metres; Ostersund, 770 metres;** and **Sundsvall, 542 metres.**—4.5 p.m., Variety Programme. 4.40, Reading. 5.0, Popular Music on Gramophone Records. 5.55, Programme from **Copenhagen.** 6.15, Weather and News. 6.30, Parliamentary Report. 6.50, Military Band Concert, conducted by Ivar Widner. 7.45, Talk. 8.15, Choral Concert, conducted by Hildor Lundvik. 9.0, Orchestral Concert: Festival Polonaise (Svendsen); Suite No. 2 (de Micheli); Waltz, Dorfschwalben aus Oesterreich (Jos. Strauss); Mexican Serenade, My Little Star (Ponce-Heifetz); Tango from The Three Musketeers; Swedish National Melodies (Berlin); Pasodoble, Saragossa (de Gredos). 10.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert of Bizet's Music. 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Gramophone Concert: Bacchanale from Tannhäuser (Wagner); Norwegian Rhapsody (Lalo); Fêtes (Debussy); Selection from La Péri (Dukas). The Coronation from Boris Godunov (Mussorgsky). 5.0, Orchestral Concert, conducted by Roskam: March, Blaze away (Holzmann); Wedding Waltz (Lincke); Overture, Tutti in maschera (Pedrotti); Polospiele (Fetras); L'amoureuse Sérénade (Filipucci); Selection from Rose Marie (Friml); Chinesische Strassenserenade (Siede); Ballet Suite (Popy). 6.0, Film Notes. 6.15, Topical Talk in German. 6.30, Gramophone Concert: Turkish March (Mozart); Le concon (Daquin); Jardin des amours (Casadesus); Cloches de Fête (Fanchey); La Violinista (Marconi); Cymbalum Czardas (Berény); Improvisations (Berény); Das Lied ist aus (Stolz); Adieu mein kleiner Gardeoffizier (Stolz). 7.30, Time and News. 7.45, Lottery Results. 8.0, La Vannina—Opera in Three Acts (Paul Bastide). 10.30 (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and **FREIBURG, 570 metres.**—12.15 p.m., Time, News, Weather and Programme Announcements. 12.30 (from **Mannheim**), French Horn Quartet Concert: Jagdfanfare (Möhring); Serenade, Ich grüsse dich (Härtel); Im Waldesdunkel (Diewitz); Der Wunsch (Witt); Herzeleid (Koschat); Potpourri of Hunting Songs (Wiegand), followed by Sponsored Concert. 1.30, Spanish Lesson. 2.0, English Lesson for Beginners. 2.30 to 4.0, Interval. 4.0, See **Munich.** 5.15, Time, Weather and Agricultural Report. 5.25, Talk on Precious Metals. 5.50, See **Frankfurt.** 6.15, Time and News. 6.30, Carnival Concert by the Stuttgart Philharmonic Orchestra, conducted by Gustav Görlich. Soloists: Gerda Hansi (Soprano) and Hans Hanus (Tenor). March, King Carnival (Rosey); Soprano Solo: Colombinens Auftritt from Die Tanzgräfin (Stolz); Soprano and Tenor Duet: Irgendwas ist mit mir heut los from Die Tanzgräfin (Stolz); Waltz, Freut euch des Lebens (Joh. Strauss); Soprano and Tenor Duet from Die Tanzgräfin (Stolz); Soprano and Tenor Duet: Nachtschwärmer-Walzer (Ziehrer); Soprano Solo: Ein Schwipserl möcht i haben, from Rund um die Liebe (O. Strauss); Soprano and Tenor Duet Song from The Merry Widow (Lehár). 7.30, Confetti—A Carnival Sequence, by the Stuttgart Philharmonic Dance Orchestra and Soloists. 9.0, Time, News, Weather and Programme Announcements. 9.20, Chess Lesson. 9.45, Dance Music by the Stuttgart Philharmonic Dance Orchestra, conducted by Harry Risch. Soloist: Walter Maurer (Tenor). 11.0, Dance Music relayed from **London.** 12 **Midnight,** Close Down.

SUNDSVALL.—See **Stockholm.**

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—5.30 p.m., Concert by a Viennese Orchestra. 6.0, News. 6.15, Opera Music: Aria from Fidelio (Beethoven); Chorus of the Priests and Finale from The Magic Flute (Mozart). 6.30, Extracts from The Three-cornered Hat (Falla) by the Symphony Orchestra. 6.45, Music by an Argentine Orchestra. 7.0, Tourist Report. 7.15, News, Horse Racing Results and Market Prices. 7.25, Local News Bulletin. 7.30, Popular Melodies. 7.45, Operetta Music: Selection from No, No, Nanette (Youmans); Aria, from Die geschiedene Frau (Fall); Selection from Le Grand Mogol (Audran). 8.0, Concert: Part I: Opera Music: Aria from Si j'étais roi (Adam); Selection from Mirella (Gounod); Aria from Werther (Massenet); Part II: Instrumental Music: 'Cello Solo: Le Cygne (Saint-Saëns); Xylophone Solo: Liebeslied (Kreisler); Pianoforte Solo: Arabesque (Jeanjean). 8.30, Accordion Music. 8.45, Light Orchestral Music. 9.0, Extracts from Romeo and Julliet (Gounod). 9.30, Symphony Concert: Chinese Street Serenade (Siede); Hurra, die Musik kommt (Zimmer); Ethopian Dance from Sylvia (Delibes); Wedding March (Mendelssohn); Lieder der Liebesnacht (Lincke); Très jolie (Waldteufel). 10.0, Extracts from Sound Films. 10.15, North-African News. 10.30, Concert for Listeners in Morocco: Potpourri, Vom Rhein zur Donau (Rhode); Melody from Les Saltimbanques (Ganne); Entr'acte Music from Carmen (Bizet); Romance à l'Inconnue (Germain); Jungle Drums (Ketelbey). 11.0, Request Concert: Ballet Music from Faust (Gounod); Dream of Love after the Ball (Czibulka); Le petit Quinquin (Desromseaux). 11.30 to 12 **Midnight,** Programme in English by the I.B.C. Mr. H. K. Hitchcock announcing. Variety: Please, Lazy Day, Out of Nowhere, Always in my Heart, Till To-morrow, Mother's Smile, Ain't it great to be Home Again, Here Lies Love. 11.57, I.B.C. Goodnight Melody. 12 **Midnight,** Weather and Announcements. 12.5 a.m. **(Tuesday),** Musical Programme. 12.30 (approx.), Close Down.

TRIESTE

247.7 metres; 10 kW.—4.30 p.m., See **Rome.** After the Programme, Relay from **Turin.** 6.35, Orchestral Music from the Café Dante. 7.0 till Close Down, See **Turin.**

TRONDHEIM.—See **Oslo.**

TURIN

273.7 metres; 7 kW. Relayed by **Milan, 331.5 metres; Genoa, 312.8 metres;** and **Florence, 500.8 metres.**—4.30 p.m., See **Rome.** After the Relay, Giornale Radio, Agricultural and Dopolavoro Notes. 6.0, Gramophone Records of Popular Music. 6.20, Giornale Radio. 6.30, Time, Announcements, Tourist Report and Gramophone Records of Light Music. 7.0, Giornale Radio, Weather, and Gramophone Records (contd.). 7.30, Concert of Chamber Music: Arrigo Serato (Violin) and Sandro Fuga (Pianoforte). Sonata in A for Violin and Pianoforte (Bach); Pianoforte Solos; Sonata for Violin and Pianoforte (Franck). 8.20, A Comedy in One Act. 9.0, Orchestral Concert, conducted by Ugo Tansini. 10.0, Giornale Radio.

VATICAN CITY

12.84 metres (Morning), and **50.26 metres (Evening);** 10 kW.—10.0 to 10.15 a.m., Religious Information in Italian. 7.0 to 7.15 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by **Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 245.9 metres;** and **Salzburg, 218.5 metres.**—4.0 p.m., Orchestral Concert, conducted by Karl Hawranek. Overture, Wiener Frauen (Lehár); Selection from La belle Hélène (Offenbach); Selection from La Traviata (Verdi); Waltz, Estudiantina (Waldteufel); Potpourri, Für lustige Leut' (Komzak). 5.5, Talk on the Art Exhibition in the Austrian Gallery: Still Life in Three Centuries of Austrian Painting. 5.25, Talk: Books of Reference in Connection with the Week's Talks. 5.30, Talk: Carnival in Aussee. 5.55, English Lesson. 6.20, Time, Weather and Programme Announcements. 6.40 (approx.), Concert of Yugoslav Songs by the Lisinski Choir, relayed from **Zagreb (307 metres).** 7.10, The Eternal Feminine—Radio Humoresque (Willi Knepler). 8.20, News, Weather and Announcements. 8.35, Dance Music by the Karl Machek Jazz Band, relayed from the Café Splendide.

WARSAW

1,411 metres; 120 kW.—10.58 a.m., Time Signal and Bugle Call from the Tower of St. Mary's Church, Cracow. 11.5, Programme Announcements. 11.10, Light Music on Gramophone Records. 12.20 p.m., Weather Forecast. 12.25 to 2.10, Interval. 2.10, Announcements. 2.15, Economic Notes. 2.25, Traffic Report. 2.35, Answers to Correspondence. 2.50, Light Music on Gramophone Records. 3.25, Elementary French Lesson. 3.40, Talk on Economics. 4.0, Pianoforte Recital by Mme. Berkwic: Sonata in C, Op. 53—the Waldstein (Beethoven); Barcarolle (Chopin); Variations on a Theme by Paganini (Liszt). 4.35, Recital of Italian Songs by Mme. Labia (Mezzo-Soprano) and B. Wilecka (Soprano); Duet (Piccini); Piangete (Cavalli); Nebbie (Respighi); Canzone napolitana (Tagliaferri); Duet: Barcarolle (Bianchini); Sicilian Songs: Mimì's Aria from La Bohème (Puccini). In the Interval, Announcements. 5.35, Topical News. 5.40, Dance Music on Gramophone Records. 6.0, Miscellaneous Items. 6.20, Answers to Agricultural Correspondence. 6.30, Topical Talk. 6.45, Radio Journal. 7.0, Die Frau ohne Küss—Operetta in Three Acts (Kollo). In the intervals, Sports Notes and Radio Journal. 9.0, Answers to Technical Correspondence. 9.15, Dance Music, relayed from **Lwow (381 metres).** 9.55, Aviation Weather Report and Police Notes. 10.0, Dance Music from the Adria Dance Hall.

WILNO

563 metres; 16 kW.—4.55 p.m., Programme Announcements. 5.0, Italian Song Recital, relayed from **Warsaw.** 5.20, Request Gramophone Concert. 5.40, Talk in Lithuanian: Lithuanian Foreign Politics. 5.55, Miscellaneous Items. 6.0, Review. 6.10, Miscellaneous Announcements. 6.15, Sports Talk. 6.30, See **Warsaw.** 9.15, Dance Music, relayed from **Lwow (381 metres).** 9.55, See **Warsaw.** 11.0 (approx.), Close Down.

ZURICH.—See **Schweizerischer Landessender.**

TUESDAY

FEBRUARY THE TWENTY-EIGHTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL	Orchestral concert. Dr. John Baker: "Biology in Everyday Life." "Tannhäuser and the Jockey Club," a play.
LONDON REGIONAL	Organ recital. Vaudeville programme. Orchestral concert.
MIDLAND REGIONAL	A recital by Leicestershire artists. "Folk Lore and Legends of Leicestershire," by Lieut.-Col. R. E. Martin. "Melody," a gramophonic entertainment. "The Hosiery and Knitted Wear Trade," a talk by Mr. Herbert A. Buckler.
NORTH REGIONAL	Orchestral and Male Voice Choral programme. Mr. Lawrence Haward: "The Mouth in Northern Art."
WEST REGIONAL	Taunton Madrigal Society. Annual Ladies' Night Concert, relayed from the County Theatre, Taunton.
SCOTTISH REGIONAL	"Burns as a Song Collector," a talk by Mr. Thomas Henderson, with musical illustrations. Dr. George Kitchin. "The Sense of Nonsense—Some Scottish Parodies."
BELFAST	Light orchestral music. An operatic programme.

ABROAD

HAMBURG	6.30 p.m. Operetta: "The Stolen Warehouse" (E. Roters).
LANGENBERG	7 p.m. A Shrove Tuesday Ball.
SOTTENS	7.35 p.m. Symphony concert, conducted by Ernest Ansermet.
STRASBOURG	8.30 p.m. Carnival programme from Paris.
TURIN	7.30 p.m. Operetta: "Die Landstreicher" (Zeilrer).
WARSAW	4 p.m. The Philharmonic Orchestra, conducted by Fitelberg.

ATHLONE

413 metres; 60 kW.; and **CORK, 224.4 metres.**—**1.30 to 2.0 p.m.,** Time, Weather, Stock Report and Popular Music on Gramophone Records. **6.0,** Variety Music on Gramophone Records. **6.15,** Programme for Children. **7.0,** Variety Music on Gramophone Records. **7.15,** News and British Market Report. **7.30,** Time. **7.31,** Gaelic Talk. **7.45,** Talk for Farmers. **8.0,** Balfe and Wallace Concert by the Station Orchestra; Soloist: Robert Irwin (Baritone). **9.0,** Dance Music from the Mansion House. **10.30,** Time, News, Weather, and Close Down.

BARCELONA

RADIO-BARCELONA, Call EAJ1, 348.8 metres; 8 kW.—**6.0 p.m.,** Trio Concert. **7.0,** Request Gramophone Records. **7.30,** Exchange Quotations and Talk on Art. **8.0,** Light Music on Gramophone Records and News. **8.15,** Football Results, followed by Gramophone Records (contd.). **9.0,** Chimes from the Cathedral, Weather Forecast, Messages for Seamen, Exchange Quotations, and Market Prices. **9.10,** An Opera relayed from the Gran Teatro del Liceo. **11.0** (in an interval), News Bulletin.

BARI

269.8 metres; 20 kW.—**7.0 p.m.,** Agricultural Notes. **7.20,** Giornale Radio and Weather. **7.30,** Time and Announcements. **7.35,** Il piccolo Marat—Opera (Mascagni), relayed from the Petruzzelli Theatre. In the intervals, Literary Notes and Talk. After the Opera, News.

BASLE.—See **Schweizerischer Landessender.**

BELGRADE

430.4 metres; 2.8 kW.—**6.0 p.m.,** Talk on Wireless. **6.30,** Violin and Pianoforte Recital: Sonata in A; Sonata in D, Op. 12, No. 1. **7.10,** Clarinet Recital; Second Movement from the Concerto for Clarinet, Op. 63 (Weber); Orientale (Cui); Three Pieces for Clarinet and Pianoforte, Op. 73 (Schumann); Rêverie (Debussy). **7.40,** Madame Butterfly—Opera (Puccini), on Gramophone Records. **9.0** (in an interval), Time Signal.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—**12.45 p.m.,** News Bulletin. **1.0,** See **Berlin (Witzleben). 2.0,** Talk for Young People: Modern Problems of Technology. **2.30,** Weather and Exchange. **3.0,** Talk for Women. **3.30,** See **Leipzig. 4.10,** Talk: The Centenary of the Birth of Count Schlieffen. **4.30,** Chamber Music—Old Cantatas and Arias: Solo Cantata from Ariadne auf Naxos (Haydn); Cantata in G; Ihr Völker hört (Telemann); Sacred Songs (Telemann). **5.0,** Talk on Industry. **5.30,** A Dialogue on Beethoven's Eroica Symphony. **5.55,** Weather and Announcements. **6.0,** Talk: Are we to have a new Morality in this Mechanical Age? **6.30,** Poetry Reading. **6.35,** Political Press Review. **7.6,** See **Langenberg. 8.0,** See **Munich. 9.20,** Weather, News, and Sports Notes. **9.45,** Weather Report for Shipping. **10.0,** Carnival Ball from **Berlin (Witzleben). 11.0** (approx.), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—**1.0 p.m.,** Gramophone Concert of Operetta Music: Overture, Banditenstreiche (Suppé); Tenor Solo from Das süsse Mädel (Reinhardt); Selection from The Bird Fancier (Zeller); Tenor Solo from The Gipsy Princess (Kálmán); Selection from The Geisha (Jones); Two Duets from The Flower of Hawaii (Abraham); Selection from Die Glückliche Reise (Künnecke); Two Airs from The Student Prince; Duet from Die Perlen der Kleopatra (O. Straus); Marching Song from Zehn Minuten Liebe (Meisel-Schwenn-Schäffers). **1.55,** Exchange and Market Prices. **2.20,** The Good Old Times—a Fairy Tale. **2.35,** Talk on Montaigne. **2.50,** Carnival Songs, arranged from Folk Songs and Popular Melodies by Haydn, Zelter, Valentin Ratgeber, Hainhofer von Walther Blachetta, and Hellmut Seidler. **3.15,** Reading (Ernst Lange). **3.30,** See **Leipzig. 4.25,** Reading: The Prototype. **4.45,** Talk on the Younger Generation. **5.5,** Sonatas for Viola: Sonata, Op. 82a, in One Movement (Paul Juon); Molto vivace and adagio expressivo from the Sonata, Op. 41 (Otto Siegl). **5.30,** Review of Books. **5.55,** The Witzleben Station informs its Listeners . . . . **6.0,** Topical Talk. **6.10,** The Berlin Carnival—a Radio Report. **6.55,** The Watchword. **7.0,** A History of Post-war Germany. Part III.—Hitler and his Path to Power. **7.15,** Berlin Carnival Evening. In the interval at 9.0, Weather, News, and Sports Notes. **11.0** (approx.), Close Down.

BERNE.—See **Schweizerischer Landessender.**

BEROMUNSTER. — See **Schweizerischer Landessender.**

BODEN.—See **Stockholm.**

BODO.—See **Oslo.**

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—**7.30 p.m.,** News and Exchange. **7.40,** Talk for Women. **7.55,** Lottery Results. **8.0,** Topical Talk. **8.15,** News Bulletin and Weather Forecast. **8.50,** A Comedy.

BRATISLAVA

279 metres; 14 kW.—**5.0 p.m.,** Flute Duets: Duet, Op. 75, No. 1 (Mozart); Duet, Op. 2, No. 1 (Quantz). **5.25,** Talk. **5.35,** Light Music on Gramophone Records. **5.45,** Slovak Spelling Lesson. **6.0,** See **Prague. 9.15,** see **Moravska-Ostrava. 11.0** (approx.), Close Down.

BREMEN. See **Hamburg.**

BRESLAU

325 metres; 60 kW.; and **GLEIWITZ, 253 metres.**—**12.10 p.m.,** Concert of Dances and Marches from Opera on Gramophone Records: Gavotte, Sarabande, Minuet, and Gavotte-Tambourin from Alcina (Händel); Smuggler's March and the Guards' Parade, from Carmen (Bizet); Gingerbread Waltz and Wedi's Ride, from Hansel and Gretel (Humperdinck); Mimosa Waltz from The Geisha (Jones); Triumphal March from Aida (Verdi); Waltz from Der Rosenkavalier (Richard Strauss). **12.45 p.m.,** Time, Weather, News, and Exchange. **1.5,** Gramophone Concert of Carnival Music: Selection from A Masked Ball (Verdi); Carnival Dance (Opler); Waltz from the Operetta Ein rheinisches Mädchen (Hilber); Old Folk Song, Pepi, Pepi, du bist mein Spezi; Lincke Potpourri for Orchestra, Soloists, and Choir; Foxtrot, Warum bin ich verliebt in dich (Abraham); Waltz from Ball im Savoy (Abraham); Song from Tell me Tonight (Spoliansky); Potpourri, Fortissimo (Kálmán). **1.45,** Sponsored Programme with Gramophone Records. **2.10,** Agricultural Prices. **2.40,** Talk for Children: How to build a Model Aeroplane. **3.10,** Violin and Pianoforte Recital of Paul Pisk's Compositions, with the Composer at the Pianoforte: Rondo Suite for Violin and Pianoforte; Dance Suite for Pianoforte. **3.35,** Songs from Siegfried—Opera (Wagner), on Gramophone Records. **4.0,** Review of Books on Photography. **4.20,** Agricultural Prices. **4.25,** Fritz Müller-Partenkirchen reads from his Humorous Works. **4.50,** Political Speeches, with Introductory Talk by Dr. Hans Krause. **5.20,** Programme to be announced. **6.0,** Talk: General von Schlieffen, on the Centenary of his Birth. **6.35,** See **Berlin (Königs Wusterhausen). 6.55,** Weather Forecast. **7.0,** See **Langenberg. 9.5,** Time, Weather, News, Sports Notes, and Programme Announcements. **9.20,** Talk: Carnival in the Country. **9.45,** See **Munich. 11.0** (approx.), Close Down.

BRNO

242 metres; 35 kW.—**4.50 p.m.,** Esperanto Lesson. **5.0,** Talk on Music. **5.15,** Talk for Workers. **5.25,** German Transmission: News and Two Talks. **6.0,** See **Prague. 6.10,** Saxophone Solos. **6.25,** See **Prague. 9.15,** See **Moravska-Ostrava. 11.0** (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—**12 Noon,** Concert by the Small Station Orchestra, conducted by Pierre Leemans: Carnival Overture (Glazunov); Suite, Mascarade (Sullivan); Selection from a Masked Ball (Verdi); Barcharole for Pianoforte (Chopin-Liszt); Carnival (Guiraud); Waltz Hofballtänze (Lanner); Overture, Tutti in maschera (Pedrotti). **1.0 p.m.,** Journal Parlé. **1.10,** Gramophone Concert: Overture, Le maschere (Mascagni); Arlequin (Popper); Toto déguisé en suisse d'Eglise (de Sévérac); Mimi se déguise en marquise (de Sévérac); Masques (Debussy); Arlequin (Lalo); Soir de Carnaval (Borel-Clerc); Carnaval de Rome (Thomas); Les larmes de Pierrot (Bixio); Mascarade (Larôme). **5.0,** Symphony Concert, conducted by M. Meulemans; Carnaval à Paris (Svendsen); Norwegian Artists' Carnival (Svendsen); Carnaval romain (Berlioz); Carnival from Le princess d'auberge (Blockx). **6.0,** Report on the Carnival at Binche. **7.30,** Talk for Women. **8.0,** Concert by the Symphony Orchestra, conducted by A. Meulemans; M. Georges (Trombone); Overture, The Black Domino (Auber); Carnaval (aire (Luigini); Carnaval de Venise for Trombone (De Mersseman); Selection from Die Fledermaus (Joh. Strauss); Bal costumé (Rubinstein); Marche joyeuse (Chabrier). **8.45,** Extracts from Carnaval (Schumann). **9.0,** Concert by the Radio Orchestra, conducted by Franz André; Soloist: René Durand (Tenor); Artémise (Moretti); Arlequinade (Cazaneuve); Carnival Songs; Foxtrot, Bal masqué chez les oies (Mayschwabach); Carnaval (Ring); La Folia (Turina); Carnaval (Guiraud). **10.0,** Journal Parlé. **10.10,** Concert by the Max Alexys Orchestra. **11.0** (approx.), Close Down.

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW. Programme in Flemish. **12 Noon,** Carnival Concert on Gramophone Records: Carnival Overture (Dvorák); Overture, Le Carnaval romain (Berlioz); Overture, Le Maschere (Mascagni); Carnival in Venice (Benedict); Carnival from Petrushka (Stravinsky); Selection from A Masked Ball (Verdi); Overture, The Black Domino (Auber). **1.0 p.m.,** Le Journal Parlé. **1.10,** Concert by the Little Station Orchestra, conducted by P. Leemans: Overture, Le Bal Masqué (Auber); Suite Mascarade (Lacôme); Gramophone Records; Puppe und Hampelmann (Stede); Selection from La Danse en Ermeline (Caryll); Caprice on a Foxtrot Rhythm for Violin (Wigy), played by the Composer; Suite, Carnival (Ring); Foxtrot, Punch and Judy (Black). **5.0,** Concert by the Radio Orchestra, conducted by Franz André; Cortège carnavalesque (Razigade); March of the Marionettes (Bullebreck); The Match Parade (Webb); The Marzipan Army (Petek); L'arrivée des masques (Huschmann); The Dance of the Tulips (Van Oost); Carnaval japonais (De Basque); Holzpuppenmarsch (Richter); The Fairies and the Faun (Kark); March, Carnaval à Paris (Popy). **5.45,** Programme for Children. **6.15,** Vaudeville by Gaston Martens. **6.30,** Gramophone Records: Suite Carnavalesque (Thomé); Carnaval des Animaux (Saint-Saëns). **7.15,** Reading from Women of the Aftermath (Helen Zenna Smith). **7.30,** Tourist Talk. **8.0,** Concert by the Radio Orchestra, conducted by Franz André: Soloist: Jo Hekkert Van Eysden (Songs); Carnival (Siede); Selection from Tutti in Maschera (Pedrotti); Princesse Carnaval (Blasius); Three Mask Dances (Wood); Puppe und Kobold (Armandola); Songs: (a) Barcarolle from The Tales of Hoffmann (Offenbach), (b) Song from The Gipsy Baron (Joh. Strauss), (c) Spielmannslied (Nicolai); Piece (Fletcher); Waltz, Les amours de Paillasse (Sylviano); Polka, Coq et Poule (Paradis); Harlequin's Serenade (Dreyer); Funeral March of a Marionette (Gounod), followed by the S.A.R.O.V. Monthly Mosaic. **9.10,** Concert by the Station Orchestra, conducted by Arthur Meulemans: Carnival from La Princesse d'auberge (Blockx); Fantoches (Debussy); Song; Selection from Cinderella (Massenet); Carnaval à Paris (Svendsen). **10.0,** Le Journal Parlé. **10.10,** Light Music on Gramophone Records. **11.0** (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—**4.0 p.m.,** Concert of Light Music and Rumanian Music by the Motoi Orchestra. **5.0,** News and Time Signal. **5.10,** Talk. **5.25,** Concert (contd.). **6.0,** Talk on Rumania: Her Coal. **6.40,** Light Music on Gramophone Records. **7.0,** Time Signal. **7.1,** Symphony Concert by the Station Orchestra, conducted by M. Jora: Chamber Concert (Zador); Concerto No. 1 in C for Pianoforte and Orchestra (Beethoven); Suite in Classical Style (Ghiga); Symphony in B Flat, No. 1 (Schumann). In the interval at **8.0,** Talk. **8.45,** News.

BUDAPEST

550 metres; 18.5 kW. **7.0** till Close Down, also relayed on **840 metres.**—**4.0 p.m.,** Concert by the Royal Opera House Orchestra, conducted by F. Fricdl: Quo Vadis? (Szassola); Selection from Madame Butterfly (Puccini); Suite No. 2 (Guiraud); Selection from Le roi s'amuse (Delibes); Selection from Count Rinaldo (Szirmai). **5.15,** French Lesson. **5.40,** Cigány Music by the Sandor Buza Band. **6.30,** Talk. **7.0,** Carnival a Hundred Years ago—Talk with Musical Illustrations. **8.0,** Announcements. **8.15,** Carnival Gala Programme.

CASSEL.—See **Frankfurt.**

COPENHAGEN

261 metres; 0.75 kW.; and **KALUNDBORG, 1,153 metres;** 7.5 kW.—**11.0 a.m.,** Time and Chimes from the Town Hall. **11.5,** String Ensemble Concert, conducted by Harald Andersen, relayed from the Bellevue Strandhotel. **1.0 to 1.40 p.m.,** Interval. **1.40,** Orchestral Concert. In the interval at **2.25** (approx.), Reading. **3.40,** Programme for Children. **4.40,** Exchange and Fish Market Prices. **4.50,** Medical Talk. **5.20,** German Lesson. **5.50,** Weather Forecast. **6.0,** News. **6.15,** Time Signal. **6.30,** Talk: Danish Painting a Résumé. **7.0,** Chimes from the Town Hall. **7.5,** J. P. E. Hartman Music—Organ and Song Recital by N. O. Raasted and Niels Hansen, relayed from the Cathedral: Fantasia for Organ, Op. 42; Four Songs: (a) Blomstre som en Rosengaard, (b) Fugien har Rede, (c) Kom Hjertø, tag dit Regnebuet, (d) Blomst kan visne; First Movement from the Sonata, Op. 58. **7.35,** Talk: Women and the House. **7.50,** Modern Saxophone and Pianoforte Music by Winstrup Olesen and Viktor Fischer: Saxophone Solos: (a) Valse élégante (Thomsen), (b) Please (Rainger); Pianoforte Solos from Hamburg (Niemann); Saxophone Solos: (a) Poem (Fibich), (b) Valse joyeuse (Provaznik-Alsfelt). **8.15,** The Hansen Family Sketch (Jens Locher). **8.30,** Ballet Music by the Radio Orchestra, conducted by Lanny Gröndahl: Prelude to Aschenbrödel (Job Strauss); Waltz from Die Puppenfee (Bayer); Selection from Lazy John (Nedbal); Czardas from The Swan Lake (Tchaikovsky). **8.55,** News. **9.10,** Iceland in Literature and Music: The Radio Orchestra, conducted by Lanny Gröndahl; Soloists: Maria Markan (Songs) and Anna Rennert (Readings): Iceland's National Anthem (Sveinbjornsson); Iceland Overture (Leifs); Reading of Icelandic Poems; Funeral March from Leifet (Leifs); Six Songs. **10.10** (approx.), Close Down.

CORK.—See **Athlone.**

CRACOW

312.8 metres; 10 kW.—**6.0 p.m.,** Miscellaneous Items and Announcements. **6.15,** Talk: Old Cracow. **6.30,** See **Warsaw. 11.0** (approx.), Close Down.

DANZIG.—See **Heilsberg.**

DRESDEN.—See **Leipzig.**

FECAMP

225.9 metres; 1**0** kW. **12 Noon,** Military Music. **12.30 p.m.,** News Bulletin. **12.45,** Concert of Opera and Operetta Music. **6.0 to 7.0 p.m.,** Programme in English by the I.B.C. C. Danvers Walker, R. Chene, B. McNabb and W. Crofton announcing. **6.0,** Concert of Light Music for Worthing Listeners. Selection of Waltzes (arr. Anclife). Songs: (a) Love everlasting, (b) If I'm dreaming; Sous les toits de Paris (Moretti).

Songs: (a) The Song of Songs (Moya), (b) I give my heart, (c) You are my heart's delight; In the night (Tate). **6.30,** Pianoforte Recital for Bognor Listeners: Selection from Rigoletto (Verdi); Rondo Capriccioso (Mendelssohn); Wasps (Holbrooke); Seguidillas (Albéniz); Presto Agitato from the Moonlight Sonata (Beethoven); Romanian (Holbrooke); Malagnena (Albéniz); Liebestraum (Liszt). **7.0,** Local News and Light Music on Gramophone Records. **7.30,** Radio Gazette. **8.0,** The Listeners' Quarter of an Hour. **8.15,** Talk. **8.30,** Pianoforte Recital by Mlle. Pecquet. **9.0,** A Naval Ball relayed from the Hotel Frascati; and Interviews with famous Film Stars. **12 Midnight** till Close Down, Programme in English by the I.B.C. **12 Midnight,** Variety Concert: Evening in a Village Inn; Mammy is gone; Cuban Love Song; Toothache; Sing Holly, go whistle, Hey Hey; My Ohio Home; Honest, really, truly. **12.30 a.m. (Monday),** Songs; Banjo Solo; Finger tricks; I kiss your hand, Madame; Just one of my dreams; That's my song of love; Banjo Solo, The Buffoon (Augon); Roses at Dawning; A Thousand Maidens Fair; Flapperette (Greer). **1.0,** Organ Recital: In a Japanese Garden (Higgs); Falling in love again (Hollander); Sylvan Scenes (Fletcher); The Love Waltz (Heymann); I'm in the market for you (Hanley); Now I'm in love (Yellen); Eleanor (Hanley); The Sacred Hour (Ketelbey). **1.30,** Songs, Wedding Bells are ringing for Sally; This is Heaven; When your hair has turned to silver; Little Pal; On top of the World; Blue hills of Pasadena; Louise; When You've gone. **2.0,** Dance Music: We will always be sweethearts; Hummin' to myself; What would you do?; Long ago; Hoch Caroline; Marta; Sing brothers; When the rest of the crowd goes home; Shadows on the window; Looking on the bright side; Let's all dance the polka; Please don't mention it; Just Hummin' along; Don't tell a soul; How are You?; Moonlight on the river. **2.57,** I.B.C. Goodnight Melody. **3.0,** Close Down.

FLENSBURG.—See **Hamburg.**

FLORENCE.—See **Turin.**

FRANKFURT

259 metres; 17 kW.; and **CASSEL, 245.9 metres;** and **TRIER, 259.3 metres.—5.50 p.m.** (from **Trier**), Talk: The Weathering of Buildings and Monuments. **6.15,** Time, Programme Announcements, Weather, and Exchange. **6.30,** Clo-Clo—Operetta in Three Acts (Lehar). **8.30,** Bunter Abend. **9.30** (in an interval), Time, News, Weather, and Sports Report. **11.0** (approx.), Close Down.

FREDRIKSSTAD.—See **Oslo.**

FREIBURG.—See **Stuttgart.**

GENEVA.—See **Radio-Suisse Romande.**

GENOA.—See **Turin.**

GLEIWITZ.—See **Breslau.**

GOTEBORG.—See **Stockholm.**

GRAZ.—See **Vienna.**

HAMAR.—See **Oslo.**

HAMBURG

Call ha (in Morse), **372 metres;** 1.5 kW. Relayed by **Bremen, 269.8 metres; Flensburg, 227.4 metres; Hanover, 566 metres;** and **Kiel, 232.2 metres.—6.0 p.m.,** Talk: General von Schlieffen. **6.25,** Weather. **6.30,** The Stolen Warehouse—Radio Operetta (Ernst Roters). **7.45,** A Musical Masked Ball with Two Orchestras, Ten Soloists, a Choir and the Station Male Voice Quartet. In the intervals at **9.0,** Time, Weather, News, Sports Notes and Police Report; at **9.20,** Topical Talk; and at **10.20,** Ice Report.

HANOVER.—See **Hamburg.**

HEILSBERG

276.5 metres, 60 kW.; and **DANZIG, 453.2 metres.—12.5 p.m.,** Gramophone Concert of French Opera Music: Prelude to L'Africaine (Meyerbeer); Caruso: O Paradis, from L'Africaine (Meyerbeer); Suite from Carmen (Bizet); Smugglers' March from Carmen (Bizet); Margarethe Teschmacher and Marcel Wittrisch: Duet from Carmen (Bizet); Overture, Le Maçon (Auber); Chaliapin: The Death of Don Quixote (Massenet); Introduction to La Juive (Halévy); Ezio Pinza (Bass): Aria from La Juive (Halévy); Geraldine Farrar and Caruso: Duet from Manon (Massenet); Overture, Faust (Gounod); Fernand Ansseau (Tenor) and Marcel Journet (Bass): Duet from Faust (Gounod); Selection from Louise (Charpentier). In the interval at **12.20,** News. **1.30,** Sponsored Programme with Gramophone Records. **2.0,** Exchange Quotations and Market Prices. **2.30,** Musical Improvisations for Children. **3.3,** Concert by the Königsberg Opera House Orchestra, conducted by Ludwig Leschetizky: Overture, Abu Hassan (Weber); Dance Suite No. 2 from Classical Airs arranged for Orchestra (Gluck-Gevaert); Suite from Der Rosenkavalier (R. Strauss); Concert Waltz (Glazunov); Romance, Dolce notte (Leoncavallo); Selection from Das Fürstenkind (Lehar); Overture, The Gipsy Baron (Joh. Strauss). **4.30,** Review of Periodicals. **5.0,** Talk: Carnival in East Prussia. **5.15,** Market Prices. **5.20,** Ice Report. **5.30,** Talk for Workers. **5.55,** Shorthand Dictation. **6.25,** Weather Report. **6.30,** Every Man is the Architect of his own Fortune—Folk Play for Radio (Otto Zoff). **7.50** News Bulletin. **8.0,** Carnival—Concert by Walter Simlinger and the Little Orag Orchestra, conducted by Eugen Wilcken. **9.15,** Weather, News and Sports Notes.

HILVERSUM

(announced HUIZEN) 296.1 metres; 20 kW. (7 kW. up to **4.40 p.m.**)—**11.55 a.m.** (till Close Down), Programme of the Catholic Radio Society (K.R.O.). **11.55,** Concert by the K.R.O. Sextet: Kleine Wienermarsch (Kreisler); Tarna a sorrento (Curtis); Man lebt nur einmal (Strauss); Träumeri (Schumann); Selection from The Gipsy Princess (Kálmán); Melody (Ackermans). Light Music on Gramophone Records Musikalische Telegramme (Urbach); Extase (Ganne); Cavalier Waltz (Nedbal); Albumblätter (Grieg); Residentiemarsch (Schootemeyer). **1.25 to 1.40,** Interval. **1.40,** Talk. **2.15,** Talk for Women. **3.10,** Dressmaking Lesson. **3.40,** Millinery Lesson. **4.10,** Concert by the K.R.O. Orchestra, conducted by J. Gerritsen: March, Deutschmeister (Strauss); Overture, Prince Carnival (Blasius); La Hussarde (Ganne); Selection from Eine Ballnacht (O. Straus); Dance of the Merry Mascots (Ketelbey); Rossini Potpourri (Urbach); Hymn to the Sun (Rimsky-Korsakov); Marche joyeuse (Pierey). **5.10,** Violin and Pianoforte Recital by Mlle. Wijngaarden (Violin) and J. Ligeclijn (Pianoforte): Sonata, Op. 11 No. 1 (Hindemith); Sonate quasi una fantasia (Tansman); Sonata (Schulhoff). **6.10,** Esperanto Lesson. **6.30,** Concert by the K.R.O. Orchestra (contd.): The Merrymakers (Coates); In the Seventh Heaven (Petras); Spanish Gipsy Dance (Marquina); Vive le toréador (Popy). **6.50,** Educational Programme. **7.10,** Police Notes. **7.25,** Talk. **7.40,** Variety Programme. In the intervals at **8.10** and **10.40,** News Bulletin.

HORBY.—See **Stockholm.**

HUIZEN

Announced **HILVERSUM; 1,875 metres;** 8.5 kW.—Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.). **11.41 a.m.,** Concert by the Wireless Orchestra and the Song Party Musica: Honeymoon March (Rosey); Overture, Banditenstreiche (Suppé); Lyric Suite (Grieg); Quand l'amour meurt (Crémieux); Song (Noack); Songs, Dance of the Dervishes (Bendix); Selection from I Pagliacci (Leoncavallo); Dances (Alteregg); French Serenade (Grieg); Zwanzinette (Lehár); Song; Selection from Der Teufelsreiter (Kálmán); Parade des embonpoints (Aubert); Song (Benatzky); Rastlos vorwärts (Blankenburg). **1.55,** Interval. **2.10,** Variety Music on Gramophone Records. **2.40,** Talk for Women. **3.40,** Violin Recital by Boris Lensky. **4.10,** Concert by a Children's Choir. **4.40,** Programme for Children. **5.10,** Talk. **5.40,** Popular Music on Gramophone Records. **6.10,** Talk. **6.40,** Pianoforte Recital by Egbert Veen: Fantasia (Paper); Two Scottish Dances (MacCunn); Polichinelle (Rachmaninov); Waltz in C Flat Minor (Chopin); The Juggler (Toch); Mummenschanz (Korngold). **7.10,** Elementary English Lesson. **7.40,** Time, Weather and News. **7.45,** Concert by the Wireless Orchestra, conducted by Nico Treep: Overture, Orpheus in the Underworld (Offenbach); Idylle passionnelle (Razigade); Siamesische Wachtparade (Lincke). Interlude: Louis Noiret in Items from his Repertoire: Rokoko-Liebeslied (Meyer-Helmund); Serenade, Good Night (Grit); Czardas (Michelis). Interlude: Items by Louis Noiret; Scène de ballet (Lugini); Porta Hungarica (Morena). **8.40,** Act I of The Doctor's Dilemma—Play (Bernard Shaw). **9.30,** Carnival Music by the Kovacs Lajos Dance Band. **10.40,** Weather and News. **10.50,** Dance Music (contd.). **11.40** (approx.), Close Down.

INNSBRUCK.—See **Vienna.**

KALUNDBORG.—See **Copenhagen.**

KATOWICE

408 metres; 16 kW.—**6.15 p.m.,** Announcements and Light Music on Gramophone Records. **6.25,** Sports Talk. **6.30,** See **Warsaw. 9.20,** Light Music on Gramophone Records. **10.0,** See **Warsaw.**

KAUNAS

1,935 metres; 7 kW.—**4.50 p.m.,** 'Cello Solos. **5.0,** A Report. **5.10,** Lithuanian Lesson. **5.40,** Variety Programme. **6.0,** Time, Weather and News. **6.30,** Concert. **7.40,** Talk on France. **8.0,** Concert. **8.30,** Talk in Polish. **8.45,** Concert. **9.30** (approx.), Close Down.

KIEL.—See **Hamburg.**

KLAGENFURT.—See **Vienna.**

KOSICE.—See **Prague.**

LAHTI

1,796 metres, 10 kW.; and **HELSINKI, 368.1 metres.—4.0,** Concert by a Naval Band conducted by K. Hellman: Overture, Poet and Peasant (Suppé); Waltz (Vollstedt); Pirun polska (Kuula); Waltz: Wine, Women and Song (Strauss); Finnish Polka (Merikanto); Selection from The Bird Fancier (Zeller); March, Sapfer und treu (Dicker). **5.15 to 6.5,** Talks. **6.5,** Gala Carnival Programme relayed from the University. **7.45,** News in Finnish. **8.0,** News in Swedish.

LANGENBERG

473 metres; 60 kW.—**12 Noon,** Concert by the Schneider-Steuerer Schrammel Trio: Overture, A Carnival in Rome (Strauss); Songs and Dances: (a) Wiener Heurigen-Brüdermarsch (Fucik), (b) Waltz, Der Weg zum Herzen, (c) Da draussen in der Wachau—Viennese Song (Arnold); Carnival Suite (Siede); Songs and Dances (a) Hawaiian Girl (Schneider), (b) English Waltz from Purpur und Waschlau (Ascher), (c) Schade, dass Liebe ein Märchen ist, (d) Foxtrot, Die marionetten; Potpourri of Marches (Morena); Carnival Overture (Leuschner); Waltz from The Gipsy Princess (Kalman); Potpourri: Achtung! Köln singt (Otten). **1.0 p.m.** (in an interval), News. **1.30,** Sponsored Programme with Gramophone Records. **2.30,** Exchange and Time Signal. **2.50,** Musical Programme for Children. **3.20,** Notes on the Broadcasts for Schools. **3.30,** Talk: Films and Schools. **3.45,** Poems (Günther Eich). **4.0,** Sextet in G, Op. 36, for two Violins, two Violas, and two 'Cellos (Brahms). **4.35,** A Fool's Journey into 1933—A Cologne Carnival Committee a Hundred Years Ago—with Music, Song, and Dance (arr. Franz Wills). **5.15,** Italian Lesson. **5.45,** Weather, Time, Exchange, and Sports Notes. **5.55,** Agricultural Talk. **6.20,** Topical Talk. **6.30,** Talk: Shrove Tuesday on the Lower Rhine. **6.55,** First General News. **7.0,** Kehraus—A Shrove Tuesday Ball. The Station Orchestra, directed by Spitz. Soloists: Kläre Hanse, Helly Boschan, Else Schmitz (Soprano), Martha Waiter, Leonardo Aranesco (Tenor), Hans Wocke (Baritone), Wilhelm Strienz (Bass), and Paul Apel. **9.5,** News and Sports Notes, followed by Silent Night.

LAUSANNE.—See **Radio-Suisse Romande.**

LEIPZIG

389.6 metres; 120 kW.; and **DRESDEN, 319 metres.—11.5 a.m.,** Carnival Programme on Gramophone Records. **12 Noon,** News, Weather and Time. **12.15,** Instrumental Music on Gramophone Records, followed by Exchange Quotations. **1.0 p.m.,** Advice for the Unemployed. **2.0,** Review of Books on Indoor Games. **2.35,** Market Prices. **3.0,** Talk: A Journey through Walachia and Dobrudja. **3.30,** Concert by the Altenburg Orchestra, conducted by Heinz Drewes: Overture, Le premier jour de bonheur (Auber); Suite in Dance Form, Op. 210 (Kienzl); Icelandic Melodies (Raebel); Waltz (Pötschick); Melodies from The Merry Wives of Windsor (Nicolai); French Polka, Postillon d'amour (Joh. Strauss). **4.30,** Time and Weather. **4.50,** Exchange Quotations. **5.5,** Talk for Women: A Nomadic People. **5.25,** French Lesson. **5.50,** Introductory Talk to the Gewandhaus Concert on the Second of March. **6.0,** Michel de Montaigne—a Memorial Programme for the Fourth Centenary of his Birth. **6.30,** Recital of German Folk Songs. **7.0,** Speech by Reichskanzler Adolf Hitler. **8.15,** News. **8.25,** Laugh and be Merry—Winter Relief Fund Concert, relayed from Halle: Two Songs; Song from The Bird-Fancier (Zeller); Melody from The Merry Widow (Lehár); Parodies by Curt von Wolowsky; Duet; Song from The Dubarry (Millöcker-Mackeben); Song from Countess Maritza (Kálmán); Opera Duet. **9.30,** News. **9.45,** See **Munich. 11.0** (approx.), Close Down.

LINZ.—See **Vienna.**

LJUBLJANA

574.7 metres; 2.5 kW.—**6.0 p.m.,** Country Sketches. **6.30,** Talk: Heroes of our Time. **7.0,** Concert of Light Music. **8.0,** Concert by a Vocal Quartet. **8.30,** Popular Music on Gramophone Records. **9.0,** Time and News. **9.15,** Recitations. **9.45,** Talk. **10.15,** Light Music on Gramophone Records.

LWOW

381 metres; 16 kW.—**6.0 p.m.,** Talk. **6.10,** Miscellaneous Items. **6.30,** See **Warsaw. 11.0** (approx.), Close Down.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—**7.30 p.m.,** Radio Gazette for Lyons and the South-East. **8.30,** Carnival Programme, relayed from **Paris.** After the Concert, News Bulletin.

MADRID

ARANJEUZ (EAQ), 30.43 metres; 20 kW. **10.30 p.m.,** Variety Music. **10.45,** Radio Chronicle. **11.0,** Variety Music (contd.). **11.20,** Tourist Talk: Toledo. **11.35,** Answers to Correspondence. **11.40,** Light Music. **12 Midnight** (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 424.3 metres; 2 kW.—**7.0 p.m.,** Chimes, Exchange and Request Gramophone Records. **7.15,** Medical Talk. **7.30,** Hunting and Fishing Notes and Request Gramophone Records (contd.). **8.15,** News Bulletin and Political Review. **9.0,** English Lesson by the Linguaphone Method. **9.30,** Chimes, Time, Political Review and Extracts from Carmen—Opera (Bizet) on Gramophone Records. **11.45,** News Bulletin. **12 Midnight,** Chimes and Close Down.

MALMO.—See **Stockholm.**

MILAN.—See **Turin.**

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—**3.10 p.m.,** Concert of Popular Music by the Station Orchestra, conducted by J. Plichta. **4.10 p.m.,** Historical Talk. **4.20,** See **Prague. 4.50,** See **Brno. 5.0,** Talk: The Modern English Novel. **5.15,** See **Prague. 5.25,** See **Brno. 6.0,** See **Prague. 9.15,** Cabaret Programme. **11.0** (approx.), Close Down.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—**4.30,** Prince Igor—Opera (Borodin). **5.28,** Symphony Concert of Music by Vivaldi. **8.0,** Talk in French: Three Generations—Three Women's Destinies.

MOTALA.—See **Stockholm.**

MUHLACKER.—See **Stuttgart.**

MUNICH

533 metres; 60 kW. Relayed by **Augsburg** and **Kaiserslautern, 560 metres;** and **Nürnberg, 239 metres.—3.45 p.m.,** Orchestral Concert: Overture, Anacreon (Cherubini); **Waltz,** Ein Wiener Liebesbrief (Naef); Potpourri, From Gluck to Wagner (Schreiner); Way Down South (Myddleton); March Potpourri (Roland). **4.50,** Talk: A Mountain Railway and its Safety Devices. **5.15,** Talk: Humour in Place Names. **5.35,** Talk: German Ideas of Government—the House of Hohenstaufpen. **5.55,** Time, Weather and Agricultural Notes. **6.5,** Carnival Programme of Old and Modern Songs and Dances, with Introductory Talk. **6.40,** Talk in Dialect: Carnival in Swabia. **7.0,** Carnival Nonsense—a Mock Radio Programme for the Day, including Music, Talks, and an Opera Burlesque. **8.6,** Hundreds and Thousands—Humorous Programme on Gramophone Records. **9.0,** The Isle of the Blest—a Radio Report from the Carnival Festival of the Harmony Club. **9.20,** Time, Weather, News and Sports Notes. **9.45,** Farewell to Prince Carnival—Programme by the Small Station Orchestra, conducted by Erich Kloss, Käte Tellheim (Yodeller), Clemens Rapp and his Band, and Others.

NAPLES.—See **Rome.**

NOTODDEN.—See **Oslo.**

OSLO

1,083 metres; 60 kW. Relayed by **Fredrikstad, 365.8 metres; Hamar, 574.7 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres;** and **Rjukan, 447.1 metres.—4.0 p.m.,** Gramophone Concert of Popular Music. **5.0,** Programme for Housewives. **5.45,** Accordion Music. **6.0,** Announcements, Weather and News. **6.30,** English Lesson. **7.0,** Time. **7.1,** Relay of the Fram Committee Meeting: Addresses and Concert by the Philharmonic Orchestra. **8.40,** Weather and News. **9.0,** Topical Talk. **9.15,** Concert by the Station Orchestra, conducted by Hugo Kramm. **10.15** (approx.), Close Down.

OSTERSUND.—See **Stockholm.**

PALERMO

542 metres; 3 kW.—**7.0 p.m.,** Dopolavoro Notes, Tourist Report, Agricultural Notes and Giornale Radio. **7.20,** Variety Music. In an interval at **7.30,** Time and Announcements. **7.45,** Concert of Light Music and Dance Music. In the intervals, a Monologue and Notes on Art; and at **9.55,** News. **11.0** (approx.), Close Down.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW. Time Signals (on **2,650 metres**) at **9.25 a.m.** and **10.26 p.m.** (Preliminary and 6-dot Signals). **5.45 p.m.,** Le Journal Parlé. **7.20,** Weather Forecast. **7.30,** Chamber Music Concert: Marie Antoinette Pradier (Pianoforte), Roland Lamorlette (Oboe), and Germaine Cernay and Bernadette Delprat (Duets): Sonatina for Oboe and Pianoforte (de Bréville); Melody from Rodelinda (Handel); Duet from Figaro (Mozart); Passacaglia (Handel); Theme with Variations for Pianoforte (Mozart); Wiegenlied (Brahms); Hymn to Venus (de Bréville); Song from Le Roi d'Ys (Lalo); Sonata for Oboe and Pianoforte (Saint-Saëns). **8.30,** Le Roi Dagobert (Rivoire), with Music by Raymond Charpentier.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—**6.45 p.m.,** Journal Parlé. **7.0,** Sponsored Concert with Gramophone Records. **8.0,** Film Notes. **8.5,** Talk: The Circus. **8.15,** Interval. **8.30,** Sponsored Concert. **8.45,** Interval. **9.0,** Variety Concert. **10.30,** News.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW. **6.45 a.m.,** Physical Culture. **7.30,** Weather and Physical Culture (contd.). **7.45,** Probable Relay of the Test Match from Australia. **8.0,** Press Review and Weather. **8.30,** Test Match Relay (contd.). **12 Noon,** Concert by the Krettly Orchestra. Part I: Opéra-Comique Music: Selection from Das Nachtlager von Granada (Kreutzer); Selection from Le Pré aux Clercs (Herold); Selection from Le Postillon de Lonjumeau (Adam); Selection from Le Chalet (Adam); Selection from Le Domino Noir (Auber); Selection from Les Cloches de Corneville (Planquette); Selection from Mignon (Thomas); Selection from Le Caid (Thomas); Selection from Le Roi d'Ys (Lalo); Selection from Lakmé (Delibes); Selection from Le Roi malgré lui (Chabrier); Selection from Manon (Massenet); Selection from Werther (Massenet); Selection from Le Jongleur de Notre Dame (Massenet); Selection from Thaïs (Massenet); Selection from Le Portrait de Manon (Massenet); Selection from Sapho (Massenet); Selection from Le Mage (Massenet); Selection from Le Cid (Massenet); Selection from Esclarmonde (Massenet); Selection from Le Roi de Lahore (Massenet); Selection from Hérodiade

Iager in Granada (Kreutzer); Overture, The Thieving Magpie (Rossini); Sextet from Lucia di Lammermoor (Donizetti); Selection from Mirella (Gounod); Entr'acte from The Tales of Hoffmann (Offenbach); Selection from Grisélidis (Massenet); Selection from Madame Chrysanthème (Messager). Part II: Ballet Music: Ballet des Saisons (Massé); Jota (Laparra); Zamba (Laparra); Pavane d'Angelo (Italia); Fourth Mazurka (Godard); Airs de Ballet (Dubois); Russian Dance (Moszkowski). In the intervals at **1.0 p.m.**, Exchange, News, and Weather, and at **1.30**, Exchange. **2.0**, Exchange and Announcements. **3.45**, Exchange and Market Prices. **6.10**, Agricultural Talk. **6.30**, Gramophone Records: Waltz, The Banjolele (Baer); Tango, Quand l'amour est traître (Pujol); Tango, Illusion (Melli-Bianco); Polka, The Canary and the Frog; Foxtrot (Oberfeld); Amourense (Berger-de Ferandy). **6.50**, Theatre Review. **7.5**, Talk on Art: Delacroix and the East. **7.20**, Concert by the Krettly Orchestra: Chanson de la Grand-Maman (Pierné); Marche des petits Soldats de Plomb (Pierné); Old Spanish Song (Aubert); Segovia (Roussel); Romance sans Paroles (Fauré); Sicilienne (Gaubert). **7.45**, Commercial Prices, News, and Review of the British Press. **8.0**, Dramatic Programme: A Play from the Repertoire of the Comédie Française by Artists of the Comédie Française. In the intervals at **8.30**, News and Weather, and at **8.40**, Review by Pierre Scize. **9.15**, Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW. Relayed by **W8XK** on **48.86 metres** and **25.27 metres.—9.0 p.m.**, Work-a-day Thoughts. **9.5**, Business News. **9.15**, Programme to be announced. **9.30**, Weather Report. **9.31**, Johnny Muskrat. **9.32**, Market Reports. **9.45**, Pianoforte Interlude. **9.50**, David Lawrence Dispatch. **9.55**, KDKA Artist Bulletin. **9.58**, Programme Announcements. **10.0**, Programme to be announced. **10.15 to 11.15, New York** Relay. **10.15**, Adventures of Dr. Dolittle. **10.30**, The Singing Lady. **10.45**, Little Orphan Annie. **11.0**, Booth Tarkington's Maude and Cousin Bill. **11.15**, Time Signal. **11.16**, Weather Report. **11.17**, Teaberry Sport Review. **11.22**, Press News Reeler. **11.27**, Strange Facts. **11.29**, Temperature Report. **11.30, KDKA** Orchestra. **11.45 to 3.0 a.m. (Wednesday), New York** Relay. **11.45**, Today's News by Lowell Thomas. **12 Midnight**, Pepsodent Amos 'n' Andy. **12.15 a.m.**, National Advisory Council on Radio in Education—Philippine Independence, by Prof. J. R. Hayden, Manuel Roxes and Rep. Butler B. Hare. **12.45**, The Townshend Murder Mystery. **1.0**, Eno Crime Club. **1.30**, Time Signal and Adventures in Health. **1.45**, Phillips Lord in The Country Doctor. **2.0**, Household Musical Memories. **2.30**, Willard Robinson's Deep River Orchestra. **3.0**, The Tune Detective. **3.15**, Westinghouse Pioneers. **3.30**, Ilo May Bailey and Orchestra, from **New York**. **3.45**, Bradley Kincaid. **4.0**, Time Signal. **4.1**, Teaberry Sport Review. **4.11**, Temperature Report. **4.12**, Weather Report. **4.13, KDKA** Artist Bulletin. **4.15**, Press Last Minute News Flashes. **4.20**, Smith Ballew and his Orchestra. **5.0**, Cotton Club Orchestra, from **New York**. **5.30**, Time Signal and Goodnight.

PORSGRUND.—See **Oslo.**

POZNAN

335 metres; 1.9 kW. Programme also relayed on **31.35 metres** from **7.0 to 9.0 p.m.**—**5.50**, Miscellaneous Items and News. **6.10**, Book Review. **6.28**, Time Signal. **6.30**, See **Warsaw. 7.0**, Military Band Concert: March (Herzer); Waltz, Moonlight on the Alster (Fetras); Soprano Solos by Irena Felicka-Smielecka; Overture, Si j' Etais Roi (Adam); Intermezzo (Noack); Soprano Solos by Irena Felicka-Smielecka; Selection from Orpheus in the Underworld (Offenbach); Mazurka (Namyslovsky). **8.10**, Song Recital by Karol Urbanowicz (Bass); Songs from (a) Faust (Gounod), (b) Lakmé (Delibes), (c) La Bohème (Puccini), and (d) The Barber of Seville (Rossini); Songs (Rachmaninov). **8.30**, Pianoforte Recital by Gertruda Kouatkowska. In the intervals, News, Theatre Notes and Programme Announcements. **9.0**, Time, Sports Notes and Police Announcements. **9.15**, See **Warsaw. 9.30**, Dance Music from the Café Esplanade. **10.50** (approx.), Close Down.

PRAGUE

488.6 metres; 120 kW. **3.10 p.m.**, See **Moravská-Ostrava. 4.10**, Talk on Economics. **4.20**, Czech Lesson for Germans and German Lesson for Czechs. **4.50**, Popular Music on Gramophone Records. **5.5**, Agricultural Market Prices. **5.15**, Talk for Workers. **5.25**, News in German. **5.20**, German Transmission: Two Carnival Scenes (Hans Sachs). **6.0**, Chimes from the Church of St. Loudmila. Kralovske-Vinohrady. **6.1**, News. **6.10**, Talk: Housing Problems. **6.25**, A Play. In the interval at **8.0**, Time Signal. **9.0**, Time Signal. **9.1**, News Bulletin. **9.15**, See **Moravská-Ostrava. 11.0** (approx.). Close Down.

RADIO-SUISSE ROMANDE

SOTTENS; 403 metres; 25 kW.; **LAUSANNE, 680 metres**; and **GENEVA, 760 metres.**—**6.0 p.m.** (from **Geneva**), Weather, News and Announcements. **6.20** (from **Geneva**), Answers to Correspondence. **6.30** (from **Geneva**), New Gramophone Records. **7.0** (from **Geneva**), Concert by the Kedroff Quartet. **7.30** (from **Geneva**), Introductory Talk to the following Transmission. **7.35** (from **Geneva**), Symphony Concert by the Station Orchestra, relayed from the Reformation Hall. Conductor: Ernest Ansermet. Soloist: M. Hirt (Pianoforte). **8.20** (in the interval), News and Weather. **9.15** (from **Geneva**), Talk: The Work of the League of Nations. **9.30** (approx.), Close Down.

REYKJAVIK

1,200 metres; 21 kW.—**8.30 p.m.**, Weather Report. **8.40**, Musical Programme and Announcements. **9.0**, Chimes. **9.2**, News Bulletin. **9.30**, Reading. **10.0**, Pianoforte Recital by Emil Thoroddsen. **10.15**, Recitations. **10.35**, Gramophone Concert: Melodies (Sarasate): (a) Introduction and Tarantella, (b) Spanish Dance, (c) Zigeunerweisen, Op. 20, Nos. 1 and 2.

RIGA

525 metres; 15 kW.—**4.30 p.m.**, Saxophone Solos: Sérénade Badine (Gabriel Marie); Impressions (Achron); Waltz, Pamela (Wiedoeft); Amore Canta (Tagliaferri); Magnolia (Gurevitsch). **5.0**, Talk: Contemporary Philosophy. **6.0**, Weather Report. **6.5**, Orchestral Concert, conducted by J. Medins: Suite from Manfred (Schumann); Orchestral Suite (Wedig); Scherzo capriccioso (Dvorak); Minuet from the Dance Suite Op. 10 (Klaus). **7.0**, News Bulletin. **7.20**, Songs and Airs. **7.40**, Concert by the Station Orchestra, conducted by J. Medins: Potpourri, Flimmerkiste (Kollo); In the Mystic Land of Egypt (Ketelbey); Ballet Suite from Namouna (Lalo). **8.0**, Weather and News. **8.30**, Dance Music. **9.0** (approx.), Close Down.

RJUKAN.—See **Oslo.**

ROME

Call 1RO, 441 metres; 50 kW. Relayed by **Naples, 319 metres**; and **2RO, 25.4 metres.**—**7.0 a.m.**, Gymnastics. **7.15 to 7.30**, Giornale Radio and Announcements. **11.30**, Weather and Light Music on Gramophone Records. **12 Noon**, Time and Announcements. **12.2 to 1.15 p.m.**, Concert from Turin. In the interval from **12.30 to 12.45**, Giornale Radio and Exchange. **3.45**, Children's Radio Review. **4.10**, Announcements. **4.15**, Exchange and Giornale Radio. **4.30 to 5.15**, See **Turin. 6.0 (Naples)**, Shipping and Sports Notes. **6.10**, Lesson in Morse. **6.20**, Giornale Radio, Agricultural Report and Dopolavoro Notes. **7.0**, Time and Announcements. **7.2**, Talk: The Sky in March. **7.15**, Light Music on Gramophone Records. **7.30**, Sports Notes and Tourist Report. **7.45**, L'Arlésienne—Drama in Three Acts (Daudet) with Music by Bizet. **10.0** (approx.), News.

SALZBURG.—See **Vienna.**

SCHENECTADY

GENERAL ELECTRIC COMPANY, WGY, 379.5 metres; 50 kW. Relayed at intervals by **W2XAF** on **31.48 metres** and by **W2XAD** on **19.56 metres.—12 Midnight**, General Electric Programme. **12.15 a.m. (Wednesday)**, Stock Reports. **12.30, to 3.0, New York** Relay. **12.30**, Soloist. **12.45**, The Goldbergs, Comedy Sketch. **1.0**, Blackstone Plantation. **1.30**, Wayne King's Orchestra. **2.0**, Ben Bernie's Blue Ribbon Orchestra. **2.30**, Ed Wynn and the Fire Chief Band. **3.0**, Lucky Strike Hour and Programme Résumé.

SCHWEIZERISCHER LANDESSENDER

BEROMUNSTER, 459 metres; 60 kW.; **BASLE, 244.1 metres**; and **BERNE, 245.9 metres.—11.28 a.m.**, Time Signal from Neuchâtel Observatory. **11.30**, Weather and News. **11.40**, Concert by the Radio Orchestra. **12.35 p.m.**, Weather and Exchange. **12.45 to 2.30**, Interval. **2.30**, Concert by the Little Radio Orchestra. **3.0**, Schubert and Mozart Lieder for Pianoforte, on Gramophone Records. **3.30**, Popular Concert on Gramophone Records. **4.30**, Weather. **4.35 to 5.30**, Interval. **5.30** (from **Berne**), Talk: The Friendship between Wagner and Nietzsche. **6.0**, Time and Weather. **6.2** (from **Berne**), Notes on the Broadcasts for Schools. **6.15** (from **Berne**), Talk: Avalanches. **6.45** (from **Berne**), Dance Music. **7.20** (from **Berne**), Variety Programme. **8.30**, Weather and News. **8.40**, Concert by the Radio Orchestra. **9.15** (approx.), Close Down.

SOTTENS.—See **Radio-Suisse Romande.**

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by **Boden, 1,229.5 metres**; **Göteborg, 322 metres**; **Horby, 257 metres**; **Motala, 1,348 metres**; **Ostersund, 770 metres**; and **Sundsvall, 542 metres.—4.5 p.m.** (from **Sundsvall**), Accordion Music. **4.30**, Health Talk. **4.45**, Popular Music on Gramophone Records. **5.45**, Elementary French Lesson, relayed from **Malmö (231 metres). 6.15**, Weather and News. **6.30**, Talk: The International Organisation of Labour. **7.0**, Orchestral Concert. Soloist: Eva Johnn-Fehrmann (Songs). Overture, Anacreon (Cherubini). Songs: (a) Aria from Aida (Verdi), (b) Prayer from Tosca (Puccini); Nocturne (Trapp); Fantasia on Two Angevin Airs (Lacau). Songs: (a) Aria from Cavalleria rusticana (Mascagni), (b) Aria from The Force of Destiny (Verdi); Kaiser Marsch (Wagner). **8.15**, Literary Review. **8.45**, Weather and News. **9.0**, Orchestral Concert: Soderman-Mosaik (Rudolf); Waltz, Mondnacht auf der Alster (Fetras); Molly on the Shore (Grainger); Waltz and Foxtrot from Viennese Nights (Abraham); Swedish Dances (Aulin); Kalman Potpourri (arr. Feigel). **10.0** (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW. **11.30 a.m.**, Variety Music on Gramophone Records. **12.45 p.m.**, News. **1.0**, Time and Exchange. **1.5**, Caruso on Gramophone Records: Quartet from Rigoletto (Verdi); Arias (Verdi) from (a) Aida, (b) The Force of Destiny; A la luz de la luna (Anton); A Granada (Alvarez); Pompinella (Tchaikovsky); Arias from (a) L'Africaine (Meyerbeer), (b) Carmen (Bizet), and (c) I Pagliacci (Leoncavallo); Duet and Miserere from Il Trovatore (Verdi). **2.0 to 4.45**, Interval. **4.45**, Talk on Lyons. **5.0**, Concert of Jazz Music, conducted by Roskam. **6.0**, Talk in German: French Sacred and Secular Motets in the Thirteenth and Fourteenth Centuries. **6.15**, Topical Talk. **6.30**, Orchestral Concert, conducted by Maurice de Villers: March, King Carnival (Rosey); Overture, The Black Domino (Auber); Two Alsatian Dances (Merkling); Selection from Boccaccio (Suppé); Serenade from Les millions d'Arlequin (Drigo); Funeral March of a Marionette (Gounod); Toursuite amoureuse (Kalkman); Lagunen-Walzer (Joh. Strauss); March, Tout Strasbourg (Schneider). **7.20**, Time and News. **7.45**, Gramophone Concert of Light Music. **8.20**, Lottery Results. **8.30**, Carnival Programme, relayed from **Paris. 10.30** (approx.), Close Down.

STUTTGART

MUHLACKER; 360.5 metres; 60 kW.; and **FREIBURG, 570 metres.—12.30 p.m.**, Concert relayed from **Langenberg. 1.0**, Sponsored Concert. **1.30**, Advanced English Lesson. **2.0 to 3.0**, Interval. **3.0**, Talk on Flowers. **3.30**, Talk for Women: Shrovetide. **4.0**, See **Langenberg. 5.15**, Time, Weather, and Agricultural Prices. **5.25**, Talk on Count Schlieffen on the Centenary of his Birth. **5.50**, Talk by Karl Hans, relayed from **Mannheim. 6.15**, Time and News. **6.30 to 9.30**, See **Frankfurt. 9.30**, Time, News, Weather and Programme Announcements. **9.45**, See **Frankfurt. 11.0** (approx.), Close Down.

SUNDSVALL.—See **Stockholm.**

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW. **5.45 p.m.**, Popular Melodies. **6.0**, News. **6.15**, Music by an Argentine Orchestra. **6.30**, Opera Music: Two Arias from Thaïs (Massenet); Selection from Werther (Massenet). **6.45**, Extracts from Les Ballet des deux Pigeons (Messager). **7.0**, Accordion Music. **7.15**, News, Horse-racing Results, and Market Prices. **7.25**, Local News Bulletin. **7.30**, Opera Music: Aria from Siegfried (Wagner); Hymn to Venus, from Tannhäuser (Wagner); Aria from Don Giovanni (Mozart). **7.45**, Music by a Viennese Orchestra: The Tin Soldiers (Koekert); L'Etoile polaire (Wahlteufel); Drink, Brothers, Drink (Bendix); O Frühling, wie bist du so schön (Lincke); Il mio ol il tuo (Boccherini); Selection from Der Rosenkavalier (Richard Strauss). **8.0**, Extracts from Sound Films. **8.15**, Operetta Music: Melody from Un bon Garçon (Yvain); Selection from Paganini (Lehár); Melody from The Bayadere (Kálmán). **8.30**, Carnival Concert. **9.0**, Concert by a Symphony Orchestra. Der rote Mohn (Siede); Rhine March (Kreutzer); Danse macabre (Saint-Saëns); Angelus (Micheli); Potpourri of Suppé Overtures. **9.30**, Popular Melodies. **9.45**, 'Cello Solos. Mon cœur soupire (Mozart); La chaise à Porteurs (Chaminade); Have pity on me (Bakalovkov). **10.0**, Bal Musette. **10.15**, North African News. **10.30**, Concert for Listeners in Morocco. Melody (Manfred); Enchantement (Massenet); Boléro (Ravel); Selection from La petite marie (Legneq); Les papillons (Steinbitz); Pasodoble, Paris qui brille (Mahieux). **11.0**, Military Music. **11.15**, Chansonnettes. **11.30 to 12 Midnight**, Programme in English by the I.B.C. The I.B.C. Half-Hour. H. K. Hitchcock announcing. Mimi; Moon; Isn't it Romantic; How'm I doing?; Just an Echo in the Valley; Wanderer; A Little Street; Dreaming. **11.57**, I.B.C. Good night Melody. **12 Midnight**, Weather and Announcements. **12.5 a.m. (Wednesday)**, Musical Programme. **12.30** (approx.), Close Down.

TRIESTE

247.7 metres; 10 kW.—**4.30 p.m.** till Close Down, See **Turin.**

TRONDHEIM.—See **Oslo.**

TURIN

273.7 metres; 7 kW. Relayed by **Milan, 331.5 metres**; **Genoa, 312.8 metres**; and **Florence, 500.8 metres.—4.30 to 5.15**, Orchestral Concert, conducted by Ugo Tansini. **5.35**, Giornale Radio, Agricultural and Dopolavoro Notes. **6.0**, Gramophone Records of Light Music. In the intervals at **6.20**, Giornale Radio, and at **6.30**, Time, Announcements and Report of the Royal Geographical Society. **7.0**, Giornale Radio, Weather and Gramophone Records (contd.). **7.30**, Die Landstreicher—Operetta in Three Acts (Ziehrer). In the intervals, Talk and Notes on Art. After the Operetta, Giornale Radio and Dance Music. **11.0** (approx.), Close Down.

VATICAN CITY

19.84 metres (Morning) and **50.26 metres (Evening)**; 10 kW.—**10.0 to 10.15 a.m.**, Religious Information in Spanish. **7.0 to 7.15 p.m.**, Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by **Graz, 352.1 metres**; **Innsbruck, 283 metres**; **Klagenfurt, 453.2 metres**; **Linz, 245.9 metres**; and **Salzburg, 218.5 metres.—2.20 p.m.**, Concert of Italian Opera Music: Calliope de Castan (Soprano) and Ernst Urbach (Baritone): Aria, Vien Leonora, a piedi tuoi from La Favorita (Donizetti); Arias from (a) Ernani (Verdi), (b) Resurrection (Alfano); Aria, Suicidio from La Gioconda (Ponchielli); Arias (Puccini): from (a) Manon Lescaut, (b) Turandot; Aria, Ciel! mio padre from Aida (Verdi). **2.55**, Talk: The Psychology of the Mask. **3.20**, Handwork Lesson. **3.55**, Jazz Music by the Astoria Band, relayed from the Westminster Café. **5.15**, Talk on The French Author, Michel de Montaigne. **5.40**, Agricultural Talk. **5.55**, Italian Lesson. **6.20**, Time, Weather, and Programme Announcements. **6.30**, What if . . . —a Humorous Carnival Query (Artur Kaps), with Music by the Karl Eisele Orchestra and Soloists. **7.45**, Dances and Marches by Famous Composers; Concert by the Vienna Symphony Orchestra, conducted by Carl Alwin: Grosser Marsch (Haydn); German Dances (Haydn); March from the Haffner Serenade (Mozart); Six German Dances (Mozart); March in D (Beethoven); German Dances (Beethoven); Five German Dances with Coda and Seven Trios (Schubert); March from Des Teufels Luftschloss (Schubert). **9.0**, News, Weather, and Announcements. **9.15**, Dance Music by the David Mathé Jazz Band.

WARSAW

1,411 metres; 120 kW.—**10.58 a.m.**, Time Signal and Bugle Call from the Tower of St. Mary's Church, Cracow. **11.5**, Programme Announcements. **11.10**, Light Music on Gramophone Records. **12.20 p.m.**, Weather Forecast. **12.25 to 2.10**, Interval. **2.10**, Announcements. **2.15**, Economic Notes. **2.25**, Aviation Notes and Anti-Gas Drill. **2.30**, Announcements. **2.35**, Talk on Economics. **2.50**, Popular Music on Gramophone Records. **3.20**, Talk: Greek and Roman Art, relayed from **Wilno (563 metres). 3.40**, Talk on the Polish Painter, Jean Stanislawski, relayed from **Cracow (312.8 metres). 4.0**, Concert by the Philharmonic Orchestra, conducted by Fitelberg: Polonaise in E (Liszt); Romanian Dances (Béla-Bartok); Gavotte from the Suite, Aus Holbergs Zeit (Grieg); Minuet (Bolzoni); Dance of the Sylphs from The Damnation of Faust (Berlioz); Mephisto-Walzer (Liszt); Mazurka (Maszynski). In the interval, Announcements. **4.55**, Programme Announcements. **5.0**, Talk on Polish Literature; Mickiewicz. **5.20**, Topical News. **5.25**, Light Music from the Italia Café. **6.0**, Miscellaneous Items. **6.20**, Agricultural Notes. **6.30**, Talk. **6.45**, Radio Journal. **7.0**, Concert of Light Music. **7.55**, Sports Notes. **8.0**, Radio Journal. **8.5**, Concert by the Radio Orchestra, conducted by Navrot: Soloist, H. Dudiez (Soprano): Spanish Overture (Kéler-Béla); Cracovienne fantastique (Paderevski); Songs: (a) Waltz (Spolansky), (b) Song from The Tales of Hoffman (Offenbach); Waltz, Ange d'amour (Wahlteufel); Gallop, Lustig voran (Strauss); Songs: (a) Czardas from Die Fledermaus (Strauss), (b) The Blue Danube (Strauss); Oberek fantastique (Samuenfeld); Czardas (Gabriel Marie); Popular Dances (Pachernegg); Schatz-Walzer (Strauss); Mazurka (Namyslowski). **9.0**, Literary Programme. **9.15**, Popular Music on Gramophone Records. **9.55**, Aviation Weather Report and Police Notes. **10.0**, Dance Music from the Oaza Dance Hall.

WILNO

563 metres; 16 kW.—**5.25 p.m.**, Request Gramophone Records. **5.40**, Talk in Lithuanian: Germany, Poland and the Baltic. **5.55**, Miscellaneous Items. **6.0**, Review. **6.15**, Talk: Events in Wilno. **6.30**, Talk on Crystal. **6.10**, Miscellaneous Items. **6.45**, See **Warsaw. 9.15**, Reading. **9.45**, Programme from **Warsaw. 10.0**, French Operetta Music on Gramophone Records. **11.0** (approx.), Close Down.

ZURICH.—See **Schweizerischer Landessender.**

FEB. 28th TUESDAY *continued*

Foreign Programmes continued on page XIII.

PROGRAMMES CONTINUED

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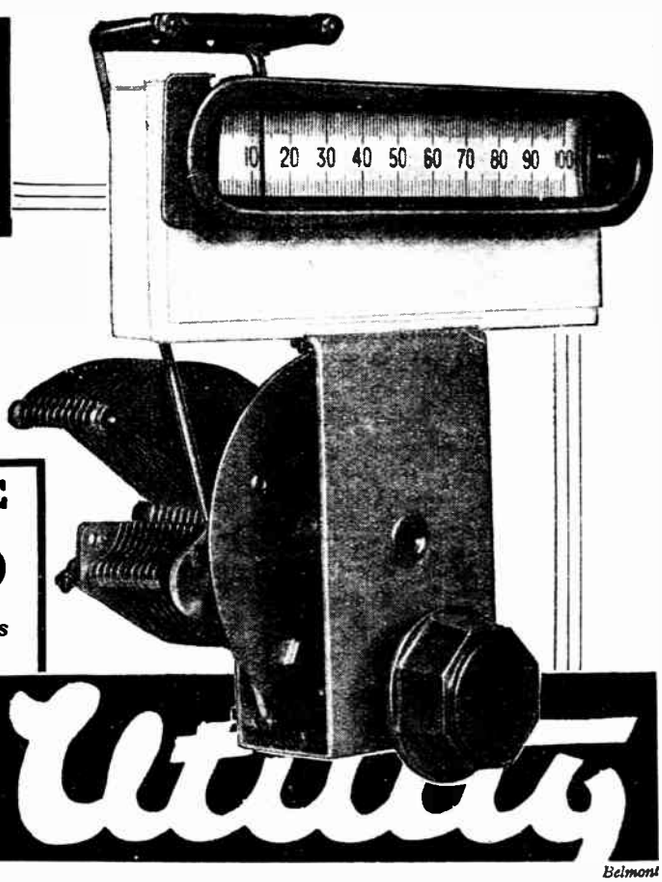

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The Wireless World

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As many of the circuits and apparatus described in these pages are covered by patents, readers are advised, before making use of them, to satisfy themselves that they would not be infringing patents.

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EDITORIAL COMMENT

Ferrocart

Importance of the New Coils

IN September, 1932, a stir was created in wireless circles by the publication in *The Wireless World* of the first information regarding a new type of radio frequency coil having an iron-content core given the name "Ferrocart," which had been developed by Hans Vogt, in Germany. We delayed to publish details of the new coils until we had made careful measurements ourselves to see if the claims made for them could be substantiated. The results obtained from our tests established beyond doubt the importance of the new principle, and the publication of the results of our measurements completely converted those who had, at first, been sceptical.

There has been little more that could be said on the subject until Ferrocart coils became available in this country. Some time has necessarily elapsed since our first announcement in September last year, before the task of the manufacturer of designing complete coils, with switching suitable for requirements in this country, could be completed. Coils have now been produced and are being put on the market, so that we are in a position to deal at once with this new coil principle in its practical application to the design of a complete receiver. Elsewhere in this issue a preliminary article on such a set, *The Wireless World* Ferrocart III, is included, and complete constructional details for building it will appear next week.

At this stage all we need say is that, even though we were prepared for exceptional results, the performance of this receiver has exceeded our own expectations. We believe we can say, with complete confidence, that in the matter of selectivity alone, quite apart from other considerations, the Ferrocart III excels in performance any other known three-valve receiver. The coils themselves are almost unbelievably small, and are wound on bobbins little larger than the bobbins used for telephone ear-pieces. The saving of space with coils of this type is, in itself, important in certain applications, but the outstanding advantage of Ferrocart coils as applied to broadcast receivers is mainly centred around the very great increase in selectivity. So substantial is the progress made in this direction that one is inclined to wonder whether the straight set with Ferrocart coils has not been lifted on to the same plane as the superheterodyne, although we must not overlook the fact that Ferrocart coils also have their applications to enhancing the performance of the superhet—but this is another story.

Q.P.P. with Triodes

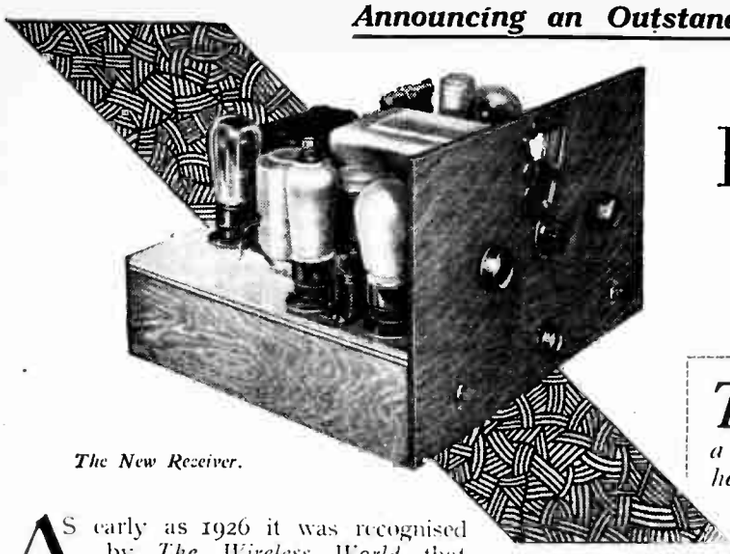
Matching Not Necessary

FROM the volume of correspondence which we have received, it would appear that a large number of readers are contemplating the conversion of the output stage of their existing battery sets to Q.P.P. By this means a very large increase of output can be expected as well as a reduced battery consumption. But there must be cases where the battery set user does not require "mains output," but feels the need for more than is obtainable from a single valve.

The smaller triodes in Q.P.P. give very pleasing reproduction in such cases, and the cost of conversion compared with that of pentodes is much lower, especially as matching is not essential.

An article dealing with this subject for the first time appears in this issue.

Announcing an Outstanding Receiver



The New Receiver.

THE FERROCART III

Record Selectivity with the New Iron-cored Tuning Coils

THE introduction of ultra-efficient iron-cored tuning coils has at last made it possible to obtain from a simple straight set a degree of selectivity which bids fair to rival that of the super-heterodyne. To those accustomed to ordinary sets the selectivity given by the new coils is a revelation, and the principle undoubtedly opens out a new era in radio reception and will give a new lease of life to the straight set. In this article the theoretical considerations involved in the application of the coils to a receiver are discussed, and the complete constructional details of a three-valve A.C. set will appear in next week's issue.

AS early as 1926 it was recognised by *The Wireless World* that efficiency in tuning coils was of fundamental importance to the practical realisation of high sensitivity and selectivity in a broadcast receiver. Large-diameter Litz-wound coils were developed, therefore, and they permitted for the first time a high degree of stable amplification to be obtained from a neutralised triode valve; they marked, in fact, the commencement of the era of effective high-frequency amplification.

The introduction of the screen-grid valve, however, made it possible to obtain the same amplification with coils of lower efficiency, and as selectivity was then of secondary importance, the large coils began to fall into disuse. Their abandonment was made complete by the necessity for complete screening in receivers, since their efficiency fell enormously when enclosed in a metal box of any reasonable dimensions, and they then proved little better than quite small solid wire coils.

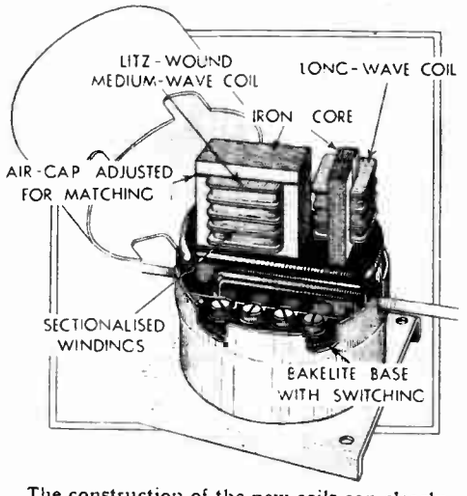
The development of ganged tuning and built-in coil switching hastened this process, until coil design reached its present standardised form. These modern coils are much less efficient than their predecessors of seven years ago, but the exigencies of space prohibit the use of the latter, since no one would contemplate using three or four coils, each contained in a screening box measuring some 10in. cube—dimensions which would be necessary to retain the full efficiency.

Reduced Coil Losses

The selectivity obtainable with the modern screened coil, however, has of late been becoming inadequate to deal with a congested ether, and the position appeared to be one of stalemate. Although an increase in coil efficiency was necessary to obtain the requisite selectivity, such an increase could not be obtained without making large increases in the coil dimensions, and this was prevented by limitations in the physical size of a receiver.

At this juncture, a new development made its appearance. It was discovered by Hans Vogt that if a coil were wound on a core consisting of very finely divided particles of iron, insulated from one another, the efficiency was increased to a remarkable extent. The introduction of the iron, of course, increased the losses due to the core, but so greatly increased the inductance that a much smaller quantity of copper wire was needed to maintain a normal inductance value. As a result, the copper losses were reduced to a greater extent than core losses were increased, and, on balance, the total resistance for a given inductance was reduced considerably. Not only this, it was found also that the physical dimensions could be reduced while still maintaining high efficiency.

A description of the new iron-core coils appeared in *The Wireless World* for September 16th, 1932, and in subsequent issues[1] the results of a series of measurements on them were published. These measurements fully confirmed the original claims, and it was shown that the efficiency of coils, smaller even than current practice dictated as the minimum, closely approached that of the early unscreened large-diameter Litz-wound inductances. It was at once evident that a very important advance had taken place.



The construction of the new coils can clearly be seen in this illustration. The waveband switching and filter coupling coils are contained within the bakelite base.

At that time, however, nothing could be done to employ them in a receiver, for they were by no means fully developed and various manufacturing difficulties had to be overcome, and circuits designed to suit their characteristics. This initial work has now been brought to a satisfactory conclusion, and the new coils will now be available. The design of a suitable receiver has been proceeded with, therefore, and it may be said at once that phenomenal results have been obtained.

The mechanical form of the new Ferrocart coils can be seen from the drawing, and it closely resembles a miniature mains transformer. The coil for the medium waveband, the larger assembly, has a core built from "E" and "I" mouldings of Ferrocart, the windings are sectionalised, and Litz wire is used. The smaller long wave coil core is built from a pair of "L" shaped mouldings, and although the windings are still sectionalised, solid wire is employed. A small air gap is left at the joins in the mouldings of the core, and it is by the precise adjustment of this that matching is effected. The moulded bakelite base contains the waveband switching, and the coupling coils for a band-pass filter.

It will be seen, therefore, that we have now available coils of rather smaller dimensions than the accepted modern type, but which have an efficiency approaching that of large unscreened Litz-wound air-core coils. It is only to be expected, therefore, that their application would raise a host of new problems.

The increased efficiency may be employed in two ways: it may be used to obtain improved selectivity, or to give increased amplification. Now it is evident that increased amplification is but rarely required, for experience shows that the sensitivity of the average present-day three-valve set is adequate for most

[1] *The Wireless World*, September 30th and October 14th, 1932.

The Ferrocart III—

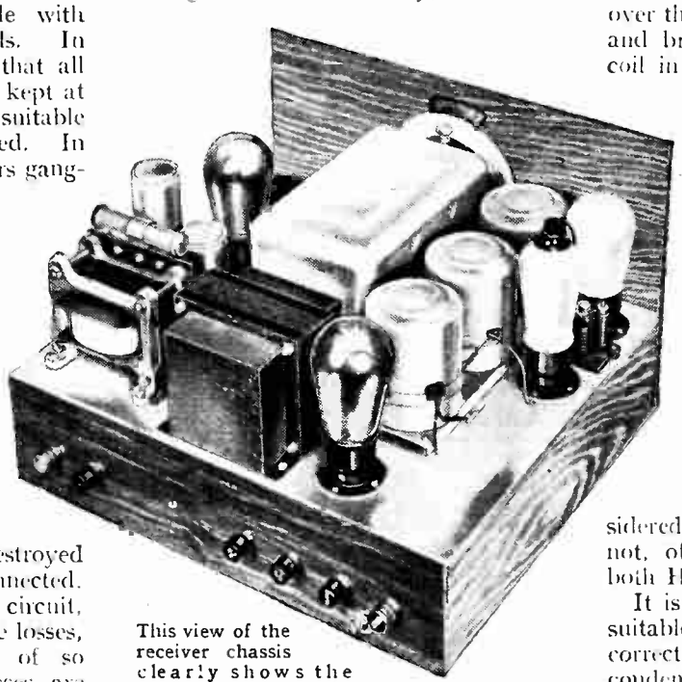
requirements. Where such a receiver usually fails is on the score of selectivity. It is obvious, therefore, that the new coils should be used to remove the chief defect of existing sets, and that no improvement in amplification is justified if, as it must do, it involves any decrease in selectivity.

The aim in the receiver design, therefore, has been to obtain a maximum of selectivity while keeping the amplification at the normal figure obtainable with ordinary screened air-core coils. In order to do this, it is essential that all losses introduced by the circuit be kept at a minimum, and the choice of suitable components becomes quite limited. In addition, the sharper tuning renders ganging more critical, and necessitates the choice of a gang condenser with very accurately matched sections.

The choice of a circuit is also a matter requiring very careful attention, and that finally adopted is shown in Fig. 1. Fundamentally, it is in no way unusual, and it is only in the details that differences will be found. It must be realised that there is little object in producing a coil of abnormal efficiency if that efficiency is to be entirely destroyed by the circuit to which it is connected. The connection of a coil to any circuit, however, must inevitably introduce losses, and the problem becomes one of so arranging matters that these losses are kept to an absolute minimum.

This is primarily a matter of choosing all the components for their efficiency, but even when this is done, they must not be connected directly across the tuned circuits if losses are not to be prohibitive. It is necessary, in nearly every case, that the equivalent of a transformer coupling to the tuned circuit be adopted, for the losses are then reduced by the square of the ratio used, and a very great gain is possible. In most cases an actual transformer connection is not used, but the equivalent, a tapping on the coil, is employed instead, since it is simpler.

The intervalve circuit, as may be seen from Fig. 1, is neither a simple tuned anode nor tuned grid circuit, but is of the type sometimes known as the tapped tuned grid circuit. Actually, in this case, the connections to both the anode of the H.F. valve and the grid of the detector are tapped down, and as it has been found possible to use the same ratio for each, a single tapping serves the purpose. The action is thus that of a step-up transformer between the H.F. valve and the tuned circuit, and a step-down transformer between the tuned circuit and the detector.



This view of the receiver chassis clearly shows the screened Ferrocart coils at the side of the gang condenser.

If ganging is to be accurately maintained, it is essential that the effective stray capacities remain the same on both wavebands; the turns ratio between the tapping and the whole coil must thus be the same on both wavebands, and switching is obviously called for. A single pole double-throw switch, therefore, changes over the tapping connection, while a make and break switch throws the long wave coil in and out of circuit as required.

In spite of the high ratios adopted in this tapping down, the damping on this intervalve circuit remains higher than is desirable, and a trace of reaction must be employed to remove this. To be successful, however, reaction must affect the tuning to a negligible extent, and it should remain fairly constant over the tuning range of the set. The anode circuit of the detector, therefore, is by no means unimportant, and the results obtainable from the H.F. side of the receiver are considerably affected by what is often considered to be a purely L.F. circuit. It is not, of course, for the detector handles both H.F. and L.F. currents.

It is important, therefore, to employ a suitable type of H.F. choke and the correct value of anode-cathode by-pass condenser. Moreover, it is necessary to insert a 500 ohms resistance in series with the reaction condenser and coil to prevent the possibility of the formation of parasitic oscillations on the long waveband, to obtain a smooth control, and to give a fairly constant setting to the control over the waveband.

It goes without saying that in these days the input circuit would take the form of

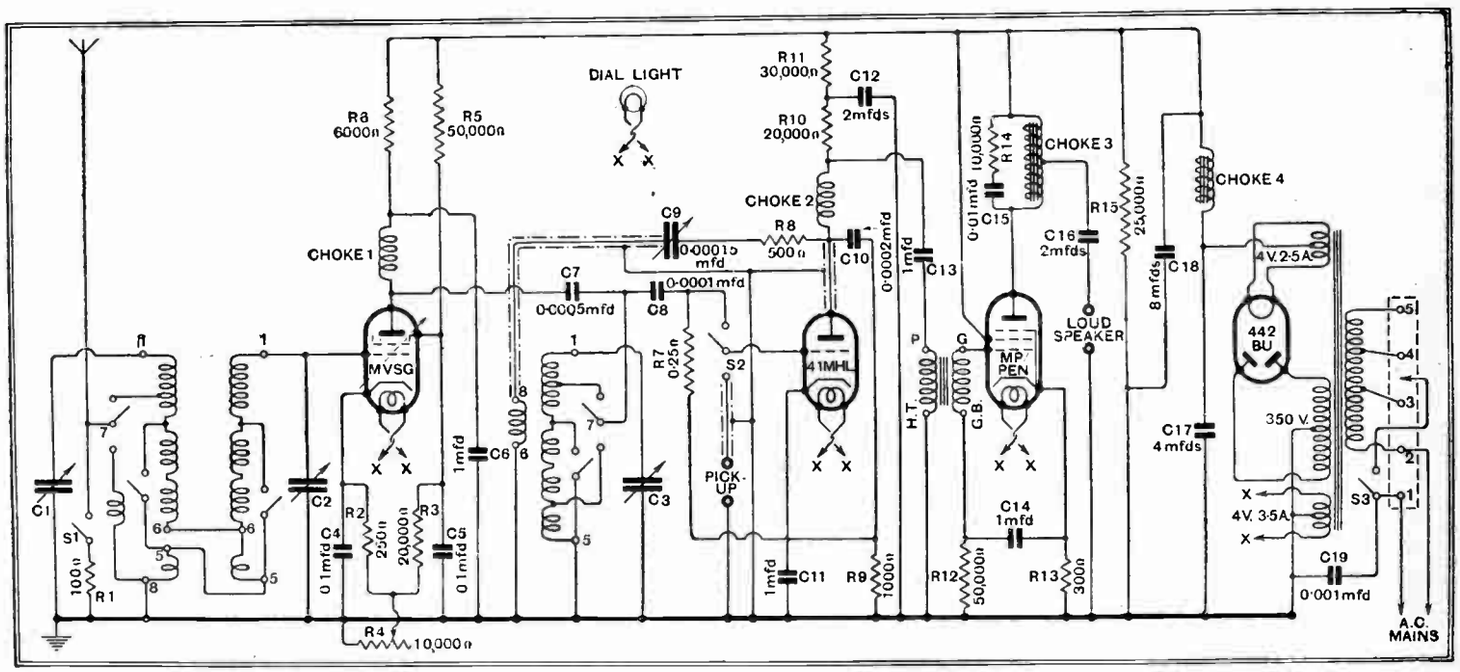


Fig. 1.—The circuit of the receiver with Ferrocart coils is fundamentally the same as that of an ordinary set, and the differences lie chiefly in preventing damping of the coils. A high-resistance smoothing choke is used, so that it may be replaced by a speaker field.

The Ferrocart III—

a band-pass filter. The precise arrangement of this, however, is rather different from usual, for common inductance coupling has been adopted. In order that the overall selectivity should remain more or less constant through the wave range, it is desirable that the filter should have a single peaked resonance curve for wavelengths up to about 300 metres, after which the familiar double-humped curve should make its appearance, and the peak separation remains sensibly constant at all higher wavelengths. With ordinary coils, a mixed filter is necessary to obtain this result, but with Ferrocart it can be obtained with a simple inductance coupling owing to the different law of variation of H.F. resistance with frequency.

It is further necessary that the aerial coupling to the first circuit be effected in such a manner that the coupling is truly to the first circuit only, and not to the secondary also. On the medium waveband, little is necessary in the way of precaution when a loose aerial coupling is used to provide selectivity, since the effects of a moderate degree of secondary circuit coupling are swamped by the remaining coil resistance. This is not the case on the long waveband, however, and if the resonance curve is to approach symmetry, it is essential to employ a separate aerial coupling coil. On both wavebands, the coupling is so adjusted that the aerial load on the secondary remains the same and is as small as possible, so that ganging remains accurate; it is actually affected by the aerial to an unusually small degree.

When these circuits are correctly designed, the remainder of the receiver can follow standard practice, and in the set to be described a variable-mu H.F. valve has been used with a power grid detector and a compensated pentode output valve. The mains equipment has a larger output than usual so that it is readily possible to energise a moving-coil loud speaker if desired and a high degree of smoothing is incorporated.

The improvement in performance which this receiver shows over a similar type fitted with ordinary coils is so great that it can be realised only by actually handling the set, and in words alone it is difficult to convey an adequate impression. In sensitivity and quality of reproduction the receiver is well up to standard, and it is in selectivity that the performance is so outstanding. It is no exaggeration to say that the selectivity is considerably greater than that given by the average two-H.F. set with four tuned circuits, and among commonly employed receivers it is exceeded only by that of the superheterodyne.

The fact that within nine miles of Brookmans Park, with a good outdoor aerial and while the two locals were working, some seventy medium wave distant stations were received, speaks volumes for the performance. Algiers, separated from the London Regional by only 18 kc., could be received with only moderate interference, and Hamburg, some 26 kc. away, was obtained with no audible interference.

When it is remembered that under the same conditions of test an ordinary three-valve set will not permit any station between the Midland and the London Regionals to be received properly, some idea of the magnitude of the improvement can be obtained. The selectivity of all straight sets falls off somewhat at the lower wavelengths, but this is much less than usual with Ferrocart coils, and it is particularly striking to find that Turin, on 1,096 kc., and Trieste, on 1,211 kc., are both quite clear of the London National on 1,147 kc. The average spread of this station is thus about six channels on either side. Stations closer to London than this can be well received, but there is some liability to interference during quiet passages in the desired programme.

A list of the parts required for the new receiver is given herewith, and full constructional details of the set itself will appear next week.

LIST OF PARTS

After the particular make of component used in the original model, suitable alternative products are given in some instances.

FERROCART III

1 3-gang condenser, 0.0005 mfd., with right-hand trimmers — **British Radiophone**
1 Dial and dial light assembly — **British Radiophone**
1 Reaction condenser, differential or straight, 0.00015 mfd., **C9** (Polar, Ormond) — **Formo 23c**
1 Set of Ferrocart coils — **Colvern**
2 H.F. chokes, Ch1, Ch2 — **McMichael "Binocular Junior"**
4 5-pin Valveholders (Eddystone) — **Clix chassis-mounting type**
1 Volume control, 10,000 ohms, **R4** (British Radiophone, Igranic, Watmel) — **Colvern ST5**
1 Electrolytic condenser, 4 mfd., **C17** — **T.C.C. type 802**
1 Electrolytic condenser, 8 mfd., **C18** — **T.C.C. type 802**
2 Fixed condensers, 2 mfd., 250 v. D.C. working, **C12, C16** — **T.C.C. type 65**
1 Fixed condenser, 1 mfd., 250 v. D.C. working, **C14** — **T.C.C. type 65**
2 Fixed condensers, 0.1 mfd., non-inductive, 400 v. D.C. test, **C4, C5** — **T.C.C. type 50**
3 Fixed condensers, 1 mfd., non-inductive, 400 v. D.C. test, **C6, C11, C13** — **T.C.C. type 50**
1 Fixed condenser, 0.0005 mfd., **C7** — **T.C.C. type 34**
1 Fixed condenser, 0.0001 mfd., **C8** — **T.C.C. type 34**
1 Fixed condenser, 0.0002 mfd., **C10** — **T.C.C. type 34**
1 Fixed condenser, 0.01 mfd., **C15** — **T.C.C. type 34**
1 Fixed condenser, 0.001 mfd., mica, 1,000 v. D.C. test, **C19** (Dubilier) — **T.C.C.**
2 Q.M.B. make-and-break switches, S1, S3 — **Bulgin S80**
1 Q.M.B. change-over switch, S2 (British Radiophone, Claude Lyons) — **Bulgin S81**
1 Pentode output choke, Ch3 — **Telsen power type W172**
1 2,500 ohms speaker field replacement choke, Ch4 (Scott Sessions) — **Sound Sales**
1 Mains transformer, screened primary, 350-0-350 v. 60 mA, 4 v. 2.5 amp. C.T., 4 v. 3.5 amp. C.T. (Challis, Parmeko) — **Bryce**
1 L.F. transformer (Varley) — **Lewcos type L.F.T.4**
1 Resistance, 100 ohms, **R1** — **Graham Farish "Ohmite"**
1 Resistance, 250 ohms, **R2** — **Graham Farish "Ohmite"**
1 Resistance, 300 ohms, **R13** — **Graham Farish "Ohmite"**
1 Resistance, 500 ohms, **R8** — **Graham Farish "Ohmite"**
1 Resistance, 1,000 ohms, **R9** — **Graham Farish "Ohmite"**
1 Resistance, 6,000 ohms, **R6** — **Graham Farish "Ohmite"**
1 Resistance, 10,000 ohms, **R14** — **Graham Farish "Ohmite"**
2 Resistances, 20,000 ohms, **R3, R10** — **Graham Farish "Ohmite"**
1 Resistance, 30,000 ohms, **R11** — **Graham Farish "Ohmite"**
2 Resistances, 50,000 ohms, **R5, R12** — **Graham Farish "Ohmite"**
1 Resistance, 250,000 ohms, **R7** — **Graham Farish "Ohmite"**
1 Resistance, 25,000 ohms, 3 watts, **R.15** — **Graham Farish "Ohmite" Power type "HD"**
(Dubilier, Erie, Claude Lyons)
1 5-way Connector — **Wilburn**
6 Terminals, aerial, earth, L.S.+, L.S.−, 2 pick-up (Belling-Lee, Eelex, Igranic) — **Clix type "B"**
1 Plymax baseboard, 14in. x 12in. x ¾in. (Prepared Metal Base Plate, bent and drilled Colvern) — **Peto-Scott**
Panel, oak-faced ply, 9in. x 14in. — **Peto-Scott**
2 Lengths screened sleeving (Goltone, Lewcos) — **Harbros**
2 ozs. 20 tinned copper wire, wood, 6 lengths sistoflex, etc.
Screws: 14 ⅛in. No. 4 R/hd.; 4 ¾in. No. 6 R/hd.; 20 ⅜in. No. 4 R/hd.; 4 ½in. No. 4 R/hd.; 12 ¼in. No. 4 R/hd.
Valves: 1 MVSG, 1 41MHL, 1MP/PEN. 1 442BU — **Cossor**

THE BRUSSELS NOTEBOOK

Wavelength Variations During January

THE first report on the wavelength vagaries of Empire stations issued in 1933 by the Brussels checking station recalls the time before the Prague Plan scheme came into force. Stations seem to be piled on top of each other, and a surprising feature is that some of the offenders who have transgressed by 7 or 8 kilocycles have formerly been notable for their stability.

Conditions on the long waveband are unchanged except for one new station working on the same wave as Kaunas. The newcomer is the Roumanian station, Craciunelu. Telegraphy stations are causing more trouble. Daventry 5XX is behaving very badly, as it has now developed a second harmonic on 385.6 kc., next to its third on Vienna and its seventh among the Scandinavian relays. Moscow and Leningrad's harmonics continue as lustily as ever.

Medium Wave Offenders

Trouble is most rife on the medium waveband. Tartu, the Finn, has encroached into forbidden ground and was last heard on 510 kc., perilously close to the SOS wave, 500 kc. Even sorely tried Ljubljana avoids the danger wave by at least 20 kc. Tampere used Budapest's wavelength for two days, and Riga interfered for two days with Munich, so that that station, which is permanently heterodyned by Palermo, was nearly wiped out. Between 644 kc. and 671 kc. no fewer than sixteen stations were working, including, of course, those on the international common wave of 662 kc.

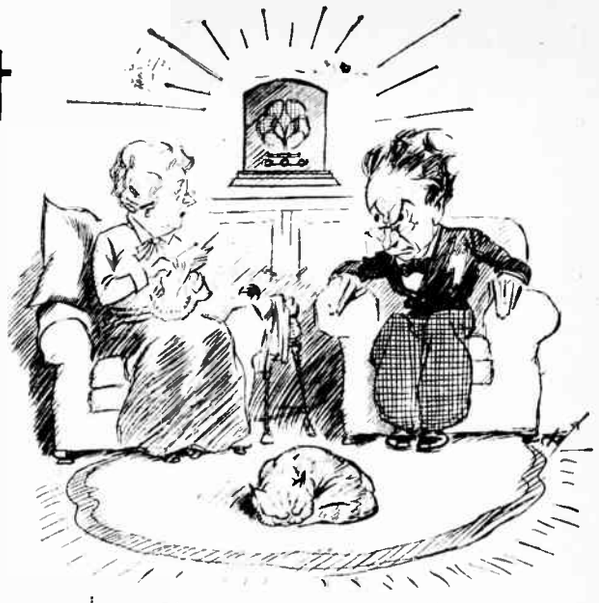
New Wave Plan Tests?

Madona, the Latvian play, was to be found on 662 kc., and also Agen, the French station, which has been rebuilt after destruction by floods. Leipzig was free from Archangelsk for a week or so while the latter was experimenting with the wavelength shared by Toulouse and Stalino, but towards the end of the month the station showed a preference for Leipzig's wave. Posen, hitherto a steady station, trespassed on Milan's wavelength for two days, and Hilversum likewise offended by interfering with Limoges-Kosice. Frankfurt jostled Hörby for one day. It is believed that these inexplicable changes are in connection with tests for a new wave plan upon which the council of the International Broadcasting Union are busy preparing for submission to the postal administrations.

Listening as an Art

Do we Make the Most of What we Hear?

By A LISTENER

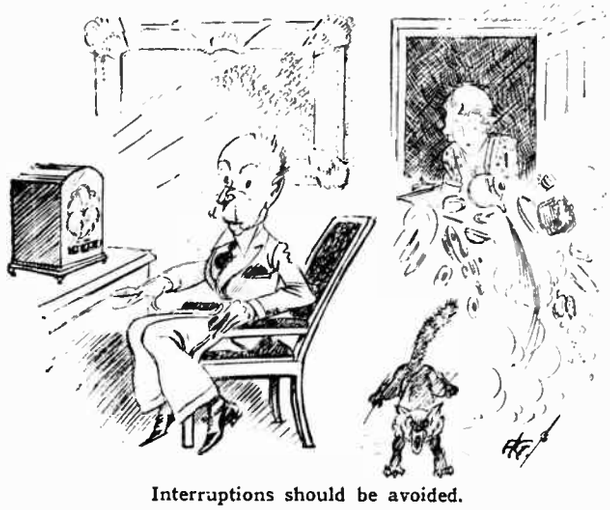


Listeners vary considerably in "quality."

SO much time is spent in discussing the art of broadcasting—such questions as the correct use of the microphone and the right studio acoustics—that we are in danger of forgetting the listener's share in the proceedings. The finest broadcast fails if it falls on inattentive ears or ears which, for a variety of reasons, are unable to do justice to what is offered them.

LISTENERS vary considerably in "quality"; in other words, different people, possibly of equal acuity of hearing, differ in their respective abilities to follow reproduced sounds, especially speech. The differences are, perhaps, more noticeable in the case of speech, since the spoken word is the normal and standardised vehicle of human communication. It is hardly possible to assess or standardise the impression conveyed by music. Domestic listening with several people often provides examples of the difference of quality between listeners; so, also, do the talkies. To a considerable extent, of course, this difference may be a matter of custom in listening to reproduced sounds, so that a certain added facility of listening is acquired. On the other hand, broadcast listening is now of so many years' standing that one would have thought that most people—certainly most listeners—would have acquired an art of listening.

The efforts of broadcasting technicians—production and engineering alike—are devoted chiefly to getting the greatest naturalness into their broadcast matter. At the listener's end the greatest appreciation of the broadcast efforts is, to a large extent, within the listener's own control—that is, assuming a good set and loud speaker, which are essential before any reproduced matter can really be appreciated. The enjoyment of broadcast programmes is largely an æsthetic matter, but so many technical conditions govern the possibility of æsthetic appreciation that the subject comes reasonably within the scope of a technical journal.



Interruptions should be avoided.

Considerable advances have been made in the past few years in the general science of acoustics and in linking up the physical side of the subject with the human side, influenced as it is by factors both physiological and psychological. For these advances the development and popularity of broadcasting have undoubtedly been largely responsible.

Not long ago there appeared in an American magazine of the "popular technical" class a short series of rules for broadcast listening. They are well worth quoting: (1) The room should be of fair size with plenty of rugs, curtains, books, etc., and with few unbroken wall-spaces; (2) listeners should sit directly in front of the loud speaker, usually at a distance of five to ten feet; (3) the receiver should be adjusted to moderate volume; if the announcer's words are intelligible in the far corners of the room the volume is usually about right; (4) avoid interruptions and discontinuities—once the volume and tuning controls are adjusted they should be left alone during the programme; (5) keep quiet—shut windows on noisy streets, etc., and avoid conversation; (6) the room should be dimly lit, with no actual lamp—not even the pilot lamp of the receiver—visible to any listener; (7) choose a comfortable chair and wear comfortable clothes.

These rules are possibly idealised, but there is a good deal of reason in them all.

The first is based on acoustic principles. Flat unbroken surfaces reflect the sound waves and cause echoes and reverberations; soft hangings, carpets, chairs, and even books all tend to absorb them and give less echo.[1] Clothes and the bodies of listeners have the same effect. For example, it has been estimated that an audience in an auditorium has about the same effect as would a series of feather beds spread over the seats. Too complete absorption gives a "dead" effect, but too much echo is the more likely and therefore the more to be watched.

The second rule is based on the fact that loud speakers mostly send out their waves in a beam or cone, which, incidentally, may vary for different frequencies. As regards the third rule, moderate volume obviously avoids distortion in set or speaker. The suggested criterion should have the general effect that peaks of loudest sounds are not such as to give detectable distortion.

The fourth rule, about interruptions, is merely the common sense of any sort of listening, and applies to broadcast just as it does to theatre or concert. Undue meddling with the controls is a common complaint of many domestic "experts," and is irritating and distracting to the rest of the household. The same general common sense applies also to the fifth rule, since any form of extraneous noise is naturally detrimental to the hearing of the programme. This, of course, assumes that the programme is worth listening to!

Talking and Listening

Here it may be interpolated that many people keep their sets switched on when they are not listening. We read from time to time of "wireless nerves." No doubt they are quite real, but are mostly due, not to obscure or magic effects of ether waves upon our systems, but to the irritation to which many people willingly expose themselves by listening to wireless and to other things at the same time. You must all know some friend—or fiend—who keeps the wireless on, usually at full volume, during conversation when nobody is listening to it, getting everybody, including, one hopes, himself, worked up into a state of nerves.

But this is aside. Certainly, for serious listening to a programme, the fifth rule is absolutely sound.

[1] This subject was dealt with at length by W. H. O. Sweeny in *The Wireless World* of January 20th, 1933.

Listening as an Art—

This (fifth) rule about silence also borders on to matters jointly physiological and psychological, both of which enter prominently into the last two rules. For example, the sixth rule about dim lighting is based on what appears to be a proved psychological fact, described, broadly, as "mixture of the senses." It is generally known and agreed that the final appreciation of the various senses lies, not in the particular sensatory organ concerned, but in the brain. As a result, it appears that if the brain is busy with one sense it is less able to be stimulated by another.

Friend or fiend?

Examples are found in underground railways. Measurement of the absolute intensity of sound have revealed that, although the noise-level in a dim subway was actually less than in the open street, most ears found it greater. This is explained by the suggestion that in the dim light of the subway the eye is less strongly stimulated than in the daylight of the street, and that the ear—or, rather, the brain through the ear—is more actively affected by sounds of less strength. Similarly, the sense of touch can be measured by an appropriate instrument, and it has been found that subjects have shown decreased delicacy of touch when listening intently to a sound or when in a brightly lit room. This no doubt explains the apparent enhancement of the other senses manifested by blind people.

An application of this fact is found in the sixth rule (about lighting). It is certainly a fairly normal experience that for best and most intent "listening" the room should be dimly lit—even dark. Have you ever tried closing the eyes when engaged in a trying long-distance trunk call?

Another fact in connection with lighting, also, is that dim illumination undoubtedly helps the listener to create his own imaginative background to the "heard" broadcast. The double broadcast of "Rope," for example, gave an excellent opportunity of trying the experiment of two degrees of lighting, and the effect was quite convincing. On that memorable Armistice night when "Journey's End" was broadcast a dim fire-glow permitted the conjuring up of a setting that differed but little from that of the stage presentation seen a few weeks later. Numerous other examples will readily occur to any listeners who have tried a like experiment. When the B.B.C. advises a dim background it is worth while to try their advice, also to do the same on many occasions when they do not.

The same reasoning of the "mixture of the senses" is the basis of the last rule, about comfort. It is beyond doubt that definite distraction occurs with positive bodily discomfort, to say nothing of actual pain. But an exaggeration of skin sensations, even if they do not amount to conscious discomfort, may have an effect on the brain similar to that of strong light or any other sensatory stimulus, and thereby render it less active to the auditory sense. Whether or not this is of sufficient importance to justify the development of special "broadcast wear" must lie with the listener and his own sense of comfort, or his ability to indulge it. Various accessory aids to comfort can readily be imagined!

Whether or not the whole of these rules are worth regarding must obviously depend on the listener's earnestness and desire to follow the particular programme. For certain types of programme, just as for certain types of listening community, they are obviously extravagant. For other types they are equally obviously of definite advantage.

How Imagination Helps

In the present stage of broadcasting we are dependent on the one sense, that of hearing, and on obtaining from it the maximum reality that we can. This despite the developing technique of television. To put it in another way,

Special "broadcast wear"

with a good modern set and speaker it is not difficult to obtain in a room (or, at any rate, at our ears) a degree of sound comparable to that which we might have in the studio or hall. Television is still a long way off from giving us, on a domestic scale, a size of visible image commensurate with that which is so easily obtained aurally.

From many generations of acquaintance with the printed word we, or at least some of us, have developed the faculty of imaginative reading, or of conjuring up an imaginative background which is at least highly satisfactory to ourselves. Have we yet carried that imagination as far towards the art of listening?

DISTANT RECEPTION NOTES.

YOU may have noticed that Leipzig's strength is not quite what it was. The reason is quite simply that the station is now using only about 80 instead of its full 120 kilowatts. I have seen it stated that the reduction was made on account of the swamping caused to those on neighbouring wavelengths, but this, I believe, is not correct. What actually happened was that with the full power in use it was found that the quality was none too good. After a series of experiments it was discovered that the station's service area could be amply covered and the quality vastly improved by reducing power.

That the quality of the transmissions is definitely very much better with the smaller power output there is no doubt. The difficulty probably arises in connection with the amplifiers between the low-power modulator and the output stage.

Speaking of high-powered stations reminds me that I have just received direct from the head of the Cincinnati, Ohio, station WLW, the astonishing information that by the end of the present summer a new 500-kilowatt transmitter will probably be at work. The Federal Radio Board's sanction has been received, all contracts have been completed and constructional work has already begun. The new transmitter will use the present WLW wavelength of 428.3 metres, a particularly favourable one for long ranges since it is not prone to fading.

Will U.S. Heterodyne Us?

One of the most interesting features about the new station will be the "vertical radiator." This is to have a height of 840 feet, and it is calculated that its use alone will increase the service area radius of a station by twenty-five per cent. With 500 kilowatts at their command and the vertical radiator the engineers of WLW are expecting a service area with a radius of 2,500 miles.

One rather dreadful thought is that if the American station does prove to have considerable field strength in this country it may cause trouble by heterodyning both Madrid Union Radio and Belgrade, both of which will be in the high-powered class before next autumn.

I do not know whether Trieste uses occasionally more than the 10 kilowatts with which it is officially credited, but on several occasions recently this station has been received at phenomenal strength. I have had it as early as four o'clock in the afternoon with volume not very much less than that of the local. Another wonderful station at the moment is Breslau.

For some reason or other Huizen (Hilversum programmes) is very much under the weather just now. This is surprising since other long-wave stations are in excellent form.

Of the medium-wave stations the best are Brussels Nos. 1 and 2, Munich, Florence, Prague, Langenberg, Rome, Katowice, Leipzig, Toulouse, Strasbourg, Milan, Breslau, Hilversum (Huizen programmes), Turin, Trieste, and Fécamp.

Hamburg shows a wonderful improvement, and Berlin Witzleben is nearly always worth attention. Lyons Doua is good on most nights, despite its official rating of 1.5 kilowatts only, and Genoa is now much better heard.

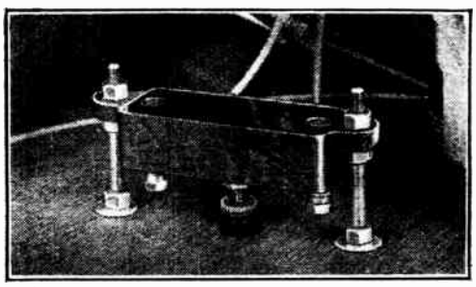
D. EXER.

Practical HINTS AND TIPS

AIDS TO BETTER RECEPTION

Inverted Condensers

IT is often convenient to be able to adjust a semi-variable condenser of the compression type without the need for delving into the interior of the set. At least one make of condenser (the Cyldon) may be mounted so that the regulating-screw head registers with a hole previously drilled through the floor or side of the cabinet in such a way that access for adjustment is obtained through this hole.



A semi-variable condenser, mounted so that adjustments may be made externally.

Without any very great difficulty, other types of condenser may be mounted so that adjustments may be made in this way, and a suggested method of mounting is shown in the accompanying illustration. Short lengths of 4 B.A. threaded rod act as supports to the condenser; the hole through which adjustment is made should be just large enough to afford clearance for the knob, which, of course, must be slotted to take a screw-driver.

Disturbing Free Bias

IT is a fact that the great majority of modern receivers of the type designed for battery feed will work satisfactorily when fed with anode current from an eliminator. This holds good even if "free" grid bias is included in the receiver; although anode voltages will generally be higher than when batteries are used, the bias system will be sufficiently self-compensating to make good any discrepancies that are likely to occur.

But care should be taken to see that nothing is done to frustrate the intentions of the designer with regard to the various currents that will flow through the bias resistor. In battery sets it is usual to feed the screening grid of an H.F. valve from an extra tap on the H.T. battery; with an eliminator, a regulating potentiometer, either of the fixed or variable type, is generally necessary for this circuit. If the screening grid potentiometer be included in the receiver, the extra current that it consumes will pass through the bias resistor, and so any valves which are biased by the voltage drop across this resistor will be working under more or less incorrect conditions.

This state of affairs may be avoided by installing the feed potentiometer as part of the eliminator and not as part of the set. The extra current which it consumes will not pass through the bias resistor if this plan be adopted. Of course, many eliminators already include provision for critical control of screening-grid voltage, and so no special precautions are necessary.

A Trimming Tool

THE adjusting screw of a trimming condenser (built into a ganged tuning condenser) is invariably in electrical connection with the "earthy" side of the circuit, and, in consequence, there should be, theoretically, no risk of disturbing tuning by body-capacity effects while these trimmers are being adjusted.

But occasionally it will be found that, in order to make the adjustment, the metal shank of a screw-driver may come into sufficiently close proximity with high-potential connections or components to introduce a change in the tuning of the associated circuits. In this way misleading effects may be encountered, and it is not a bad plan to make a special trimming tool. This device is nothing more than a screw-driver with the shortest possible metal blade, and a fairly long handle of insulating material—wood is quite good enough for this purpose.

As trimmer adjusting screws generally turn quite freely, it may be quite permissible to avoid the use of metal altogether, and to make a special screw-driver with some such insulating material as a strip or rod of bakelite, paxolin, or ebonite.

A simple form of insulated screwdriver, for adjusting trimming condensers. It is supplied with certain H.M.V. radio-gramophones.

When dealing with circuits where adjustments are exceptionally critical, it is perhaps worth while to take some pains to see that the screw-driver blade shall be an exact fit in the slot of the adjusting screw. If this is done all backlash is avoided, and it will be found that adjustments can be made more accurately, and certainly much more easily, than when the width of the slot is considerably greater than the width of the blade. This is a point worth while remembering when making initial adjustments to the Station Finder.

A Simple Selectivity Device

THERE must be many sets using manufactured coils of the standard type (tuning coil, with tapping or separate primary winding for aerial, and also a reaction winding) as the tuned-anode coil of an H.F. valve, reaction being applied from the detector anode circuit.

Here, ready to hand, is a means of increasing selectivity with these coils. Instead of using the whole coil in the anode circuit, connect

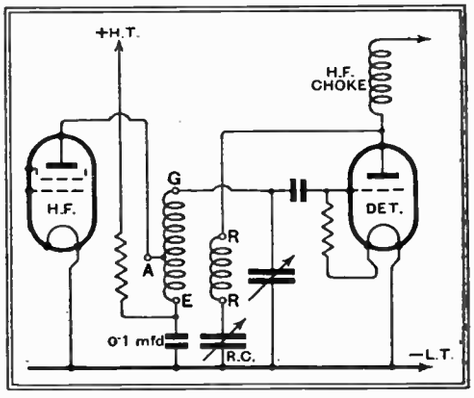


Fig. 1.—By joining the preceding anode to the "aerial" terminal of a standard coil, selectivity is improved.

the anode of the H.F. valve to the terminal marked "Aerial" of the coil (as in Fig. 1). The method thus applied is identical to that universally used to obtain selectivity between the aerial and input tuning circuit. The result will be an enormous increase in selectivity, accompanied by a relatively small drop in signal strength.

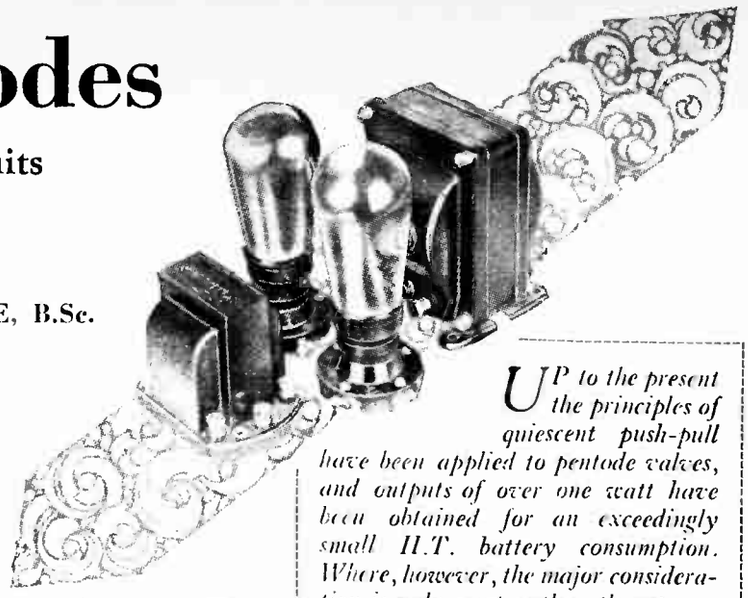
What happens is briefly this: The anode circuit impedance is reduced considerably, giving a lessened oscillatory p.d. across its portion of the coil. The tuned circuit is more or less loosely coupled to this coil. The fact of loose coupling has, however, reduced the damping effect of the preceding valve in proportion to the turns ratio. Thus the reduction in applied volts is to some extent compensated for by an increase in current, since current in a resonant circuit depends on the damping present. On the other hand, selectivity is gained, both due to the reduction in damping of the tuned circuit and to the loose coupling.

Q.P.P. with Triodes

Further Battery-economy Circuits

By

W. I. G. PAGE, B.Sc.



UP to the present the principles of quiescent push-pull have been applied to pentode valves, and outputs of over one watt have been obtained for an exceedingly small H.T. battery consumption. Where, however, the major consideration is valve cost rather than power output, triodes in Q.P.P. will probably find wide application, especially as matching is not essential and moving-iron speakers can be used satisfactorily.

NOW that the great benefits conferred by quiescent push-pull are becoming appreciated, there must be many constructors who contemplate building a Q.P.P. receiver, or who propose to modify the output stage of their existing battery set. The desire to share with the mains user the undoubted advantages of a moving-coil loud speaker is natural enough, as is also the demand for more and more undistorted energy from the output stage.

True, the valve manufacturers not long ago gave us an excellent series of two-volt power valves capable of handling a few hundred milliwatts, but until the advent of Q.P.P., a wide gulf has separated mains output from that given by the battery set.

Q.P.P. and Mains Sets

Many queries have arisen as a result of the publication in this journal of the theory[1] and practice[2] of pentodes in Q.P.P., and it is proposed to deal with a few of them. First, it is asked whether automatic grid bias can be arranged; the answer is in the negative, because a fixed bias point for each valve is essential, and as the mean anode current during modulation varies between wide limits, large changes in grid potential would take place. Can Q.P.P. output be included in a set with which an H.T. eliminator is used? The answer must be in most cases "No," because the H.T. volts delivered by the eliminator vary in sympathy with the current taken, and a steady anode voltage—a desirable condition—would be denied to the valves. In eliminators where the regulation is especially good it would be worth a trial.

Can Q.P.P. find application in a mains set? The answer to this is governed by the answers to the two previous questions. It would be possible only with battery bias or with a small separate rectifier for grid potential and an H.T. supply system such as a mercury rectifier, with which regulation can be beyond reproach. There are two other important questions, but happily the answers are less gloomy. Can matching of valves in Q.P.P. be dispensed with? Are triodes in Q.P.P. satisfactory? The rest of the article will be devoted to discussing these problems.

Considerable research has been carried out by the General Electric Co. into the possibility of using triodes in Q.P.P., and the writer is indebted to this company for certain data in respect of these valves which is given later. Any Q.P.P. system benefits if matched valves are employed, and the circuit of the "Quiescent Push-pull Two" receiver recently described probably represents the most efficient arrangement, but unless the very utmost is to be squeezed out of each valve, liberties can be taken. In fact, it is found that with triodes and the smaller pentodes, valves bought at random and representing the extremes of manufacturing tolerances may be pressed into service with the knowledge that the results will be entirely satisfactory, and a milliammeter, although most helpful, is not essential.

[1] See "Outstanding Battery Set Development," January 6th, 1933.

[2] "The Quiescent Push-pull Two," January 20th, 1933.

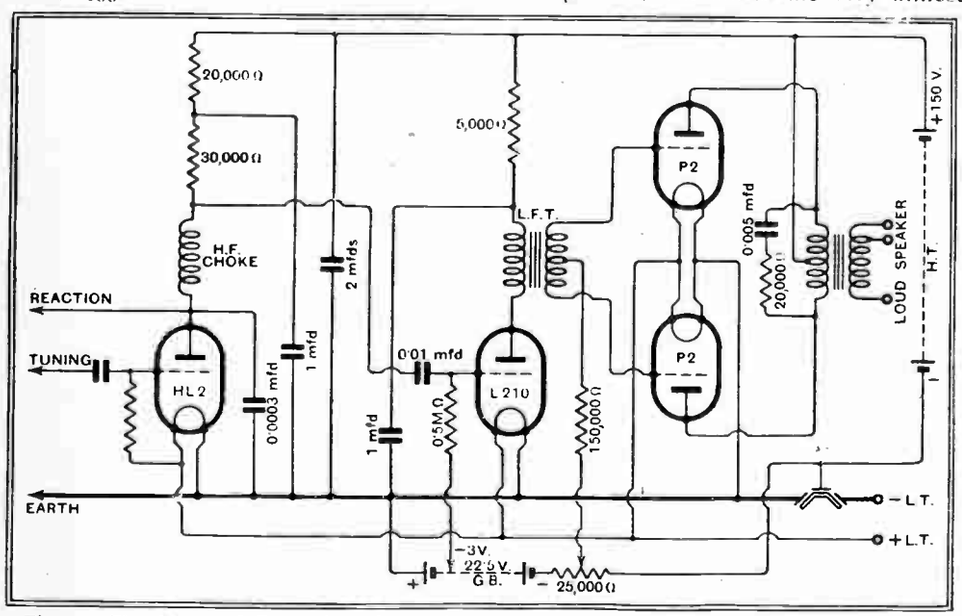


Fig. 1.—The detector-L.F. portion of a receiver with two P2 valves in Q.P.P. In this case an intermediate L.F. stage is necessary and the intervalve transformer ratio should be about 4 or 5 to 1.

Experiments with Two Receivers

Two receivers have been constructed, one with two Osram L.P.2 valves in Q.P.P., and the other with two P.2 valves. From the results obtained it can be stated with confidence that the volume and quality of reproduction will satisfy the most critical. Unmatched triodes are essentially for use where the major consideration of valve cost outweighs power output. In a room measuring, say, 15ft. by 15ft., a watt of speech energy is unnecessary, and 350 to 400 milliwatts provides good entertainment. The two L.P.2 valves at 150 volts H.T. will give this output for the ridiculously small consumption of 1 mA. standing current per valve. The detector will feed the output stage without an intermediate valve, use being made of one of the high-ratio intervalve transformers developed for Q.P.P. Although the best results will be obtained with a moving-coil speaker, the use of a moving-iron instrument is not ruled out.

The load per valve is 5,000 ohms, so that the output transformer ratio is almost the same as that for two Pen.220A valves, for which so many speakers and output devices are already available. There is a very slight tendency for high notes to be accentuated, but this is cured by the ordinary compensator circuit consisting of an 0.005 mfd. condenser and a 20,000-ohm resistance in series, the whole being shunted across the output transformer

Q.P.P. with Triodes—

primary. The 150,000-ohm anti-parasitic resistance in the common bias lead must be retained and a potentiometer across the grid battery (9 to 10½ volts in this case) is a refinement which is well worth while.

In all cases where a meter is not embodied in the set it is as well to move the bias potentiometer slider to a position of over-bias, thus giving serious distortion, and then to reduce the negative grid potential slowly until distortion on loud passages is absent. This will automatically give the correct quiescent or standing current, and the valves will be working under optimum conditions. It will be unnecessary in the circumstances to have an H.T. battery tapped at intervals of 1½ volts at the positive end.

The circuit diagram showing the detector-L.F. portion of the set with two unmatched Osram P.2 valves (triodes) in Q.P.P. is given in Fig. 1, and as the grid swing of the output system in this case is about 21 volts the detector must be followed by an intermediate low-gain resistance-coupled stage. Fortunately, this is an economical addition, incurring about 11s. in cost of materials and augmenting the anode current by only 1 mA. The output from the set amounts to about 800 milliwatts, which represents ample volume for a room measuring about 14ft. by 25ft., and again the quality of reproduction is very pleasing.

As all values are given in Fig. 1, further details of the set will be unnecessary, but emphasis should be laid on the tremendous saving in H.T. current effected by the Q.P.P. stage. It would require over 40 mA. from the H.T. source if two P.2 valves were used in ordinary push-pull to give the same output. Actually, in the set under discussion, the standard current per valve is 2 mA, and the working current—which is the deciding factor in choosing the capacity of the H.T. battery—only 7 mA. total for the two valves.

To facilitate the choice of a suitable valve for a given output, Table A has been compiled, which includes the majority of British battery valves which can satisfactorily be used in Q.P.P. T1 and T2 represent triodes and P1 and P2 pentodes, the key to the types of different makes being given in Table B.

The H.T. battery should have an initial potential of about 10 volts higher than the figure given in the third column, so that it will settle down after short use to the required value. If the bias necessary (4th column) is above about 15 an intermediate R.C.C. stage will be required before the output valves, and it can well conform to the circuit of Fig. 1. The total quiescent current is given in the next column, and includes in the case of pentodes the two auxiliary grid currents. It is interesting to note that the average working current seldom reaches twice the value of the quiescent current, although peak currents on deep modulation may reach five times this value.

TABLE A.

QUIESCENT PUSH-PULL DATA.

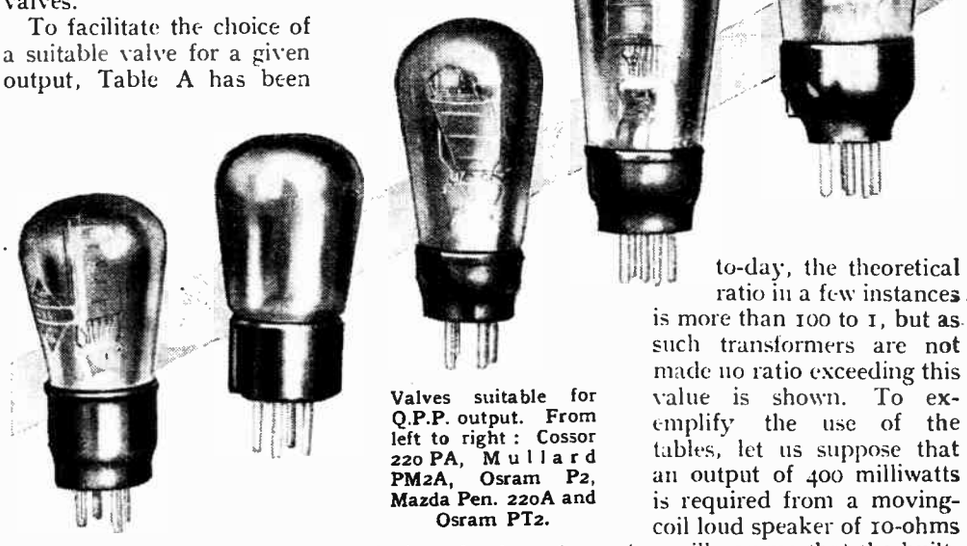
Milliwatts Output.	Two Valves in Q.P.P. (For Type see Table B.)	H.T. Volts.	Bias.	Total Quiescent H.T. Current* (mA.).	Total Working H.T. Current* (mA.).	Output Transformer (or Choke) Step-down Ratio for Speaker of following Impedance (Ohms) :—					
						2	3	5	10	15	2,000
200	T1	110	6	2.0	3.5	100	82	64	44	36	3.0
300	T1	130	7½	2.0	3.5	100	82	64	44	36	3.0
400	T1	150	9	2.0	4.0	100	82	64	44	36	3.0
500	T2	120	18	3.0	5.0	70	58	45	32	26	2.5
	P1	110	6	3.0	5.5	100	100	80	56	46	4.0
800	T2	150	21	4.0	7.0	70	58	45	32	26	2.5
	P1	130	7½	3.5	6.0	100	92	72	51	42	3.6
1,000	P1	150	9	4.5	7.5	100	90	70	49	40	3.5
	P2	110	13½	4.0	6.0	95	77	60	42	35	3.0
1,300	P2	120	15	4.5	6.5	95	77	60	42	35	3.0
2,000	P2	150	21	5.0	8.0	92	75	58	41	34	2.9

* Includes total auxiliary grid current in the case of pentodes. The column for the 2,000 ohms speaker impedance refers to a moving-iron instrument of that value or to a moving-coil speaker with a built-in matching transformer giving the same value.

TABLE B.

KEY TO VALVE TYPES.

T.1.	
Cossor	220 PA
Osram and Marconi	LP2
Mazda	P.220
Mullard	PM2A
T.2.	
Osram and Marconi	P2
Mazda	P.220A
Mullard	PM.202
P.1.	
Cossor	220 HPT
Osram and Marconi	PT2
Mazda	Pen. 220
Mullard	PM22A
P.2.	
Cossor	220 PT
Mazda	Pen. 220A
Mullard	PM22



Valves suitable for Q.P.P. output. From left to right: Cossor 220 PA, Mullard PM2A, Osram P2, Mazda Pen. 220A and Osram PT2.

The reader may be somewhat surprised at the low average H.T. consumption, but when it is realised that appreciable current is taken only when a signal is being received, the reason will be clearer, especially if the composition of a typical five-hour broadcast programme be examined. The following is part of a continuous evening's programme during which Q.P.P. current measurements were made.[3] Speech and intervals account for 125 minutes, during which little current is used.

	Minutes.
News and Talks	80
Pianoforte	20
Talks with musical illustrations	30
Orchestral concert	95
Dance music	60
Intervals	15
	300 = 5 hours

The remaining columns of Table A are devoted to the step-down ratio which must be used in the output transformer with speakers of different impedance. With 2-ohm speech coils, which are popular to-day, the theoretical ratio in a few instances is more than 100 to 1, but as such transformers are not made no ratio exceeding this value is shown. To exemplify the use of the tables, let us suppose that an output of 400 milliwatts is required from a moving-coil loud speaker of 10-ohms impedance (we will assume that the built-in transformer—if the speaker has one—is disconnected). A valve of Class T1 would be chosen, the H.T. voltage must be initially about 160, the bias 9 volts, and no intermediate L.F. stage is necessary. The transformer ratio should be 44 to 1—the nearest standard ratio of 42 to 1 being quite satisfactory. With a moving-iron speaker of high resistance (say 2,000 ohms) the ratio would have to be 3 to 1.

Fortunately the ear does not notice slight mismatching of the output stage, and where ratios between, say, 68 or 82 to 1 are indicated, a transformer of 75 to 1 would be perfectly satisfactory. Many output devices with ratios between 1 to 1 and 100 to 1 were reviewed in an article entitled "More About the Quiescent Push-pull Two," and there should be little difficulty in selecting suitable components.

[3] Data supplied by the General Electric Co., Ltd.

NEWS of the WEEK

Current Events in Brief Review

Bravo, Barrow!

IN response to complaints the Barrow (Leicester) Rural Council is equipping the local pumping station with apparatus to prevent interference with radio reception.

How the Money Goes

POST Office accounts for 1931-32 show that cash receipts from wireless licences amounted to £2,295,060, of which £1,225,709 was paid to the B.B.C.

Bredow off to Spain

SPAIN now has the opportunity to become one of the leading European nations in broadcasting affairs. We learn that Dr. Hans Bredow, the founder and late Commissioner of German broadcasting, is proceeding to Spain to reorganise the broadcasting service.

Better German Broadcasting

THAT German broadcasting has taken an encouraging turn towards greater prosperity is indicated by the licence figures just published, which show that the number of listeners increased by 120,000 during January. It is believed that the broadcasting of political speeches and improved programmes are the responsible factors.

At the moment German broadcasting is under the control of the Secretary of State, the Commissioners both having resigned.

Sir Robert Donald

SIR ROBERT DONALD, who died last week at the age of seventy-two, will be remembered for his work in connection with the Imperial Wireless Telegraphy Committee of 1924, of which he was chairman. He was a keen advocate of Empire broadcasting.

America in Berlin

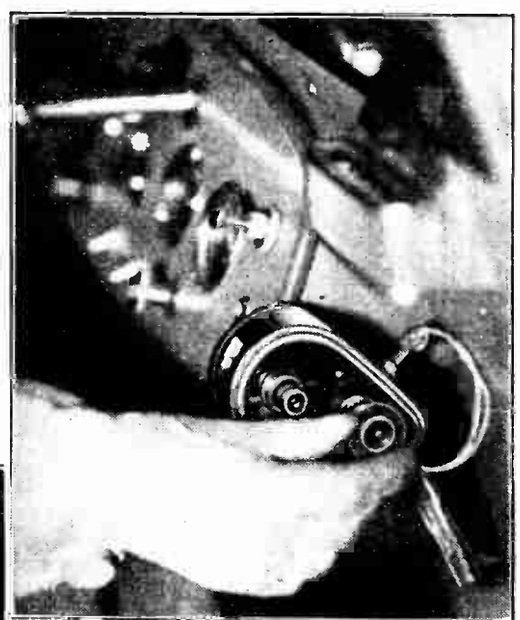
EMBOLDENED by reports in *The Wireless World* of good reception of American stations in London, a Berlin correspondent carried out nocturnal tests with interesting results. "Tests were carried out on two consecutive nights," he writes, "reception being good from 2 to 3 a.m., C.E.T. A superhet was no good as it had no high-frequency amplification ahead of the first detector. A straight H.F.-det.-L.F. did the trick, using reaction. Static was pretty bad, but I roped in three stations at good strength and many more which were unintelligible. I live in the centre of the town, and on the second floor of a five-story building. I was using a small indoor aerial.

Stabilising H.F. Amplifiers

THREE research workers, Mr. W. Ure, B.Sc., Mr. E. J. Grainger, M.Sc., and Mr. H. R. Cantelo, M.Sc., are responsible for a paper to be read before the Wireless Section of the Institution of Electrical Engineers on Wednesday next, March 1st. The paper will deal with "the Balancing and Stabilising of High Frequency Amplifiers, with special reference to Power Amplifiers for Radio Transmitters."

Congratulating the President

AMONG the first congratulatory messages destined to be received by Franklin D. Roosevelt after his inauguration as President on March 4th will be despatches transmitted *via* amateur radio from the Governors of the forty-eight States and the territorial possessions. Arrangements now being worked out by the American Radio Relay League, in co-operation with the Washington Radio Club, provide for sending the gubernatorial congratulations *via* "ham" radio stations.



CAR RADIO ON THE CONTINENT. The new Telefunken car set displayed at the Berlin International Automobile Show is a 6-valve superhet accommodated under the driver's seat and controlled from the dashboard. The loud speaker is housed in a canvas cover in the rear compartment.

French Radio Difficulties

THE rapid changes in French Governments leave radio legislation in a parlous state. Our Paris correspondent, remarking that M. Laurent-Eynac is back again as Postmaster-General and Grand Master of the Wireless Waves, says bitterly: "If he goes out of office before this paragraph reaches you he may probably be in again before it is printed."

New U.S. Network?

PLANS for a new American broadcast network, to supplement those of the National Broadcasting Company and the Columbia System are stated to have reached an advanced stage. According to our Washington correspondent the organiser of the new undertaking is Mr. E. L. Wynn, who skyrocketed to radio fame as a radio-impressario with the Amalgamated Broadcasting System, Inc., of New York, formed to provide a new range of programme material for the existing networks.

Certain "Detroit millionaires," stated to be at the back of the enterprise, are described as being "very close to the Ford Motor Co., Burroughs Adding Machine Co., Briggs Body Co., Kelvinator Co., and Frederick Stearns Co., all of whom have expressed themselves as being ready to go on the air when the network functions properly."

Since the formation of NBC in 1926 and of CBS the following year, a number of attempts have been made to create new networks, but all of them either failed to develop or faded from the picture after getting started because they were unable to stand the financial strain or meet competition. Various small regional chains have been created.

Successful Television

HOW to obtain successful reception of television images will be the main theme of a lecture entitled "Some Aspects of Television Reception," to be delivered before the Television Society by Mr. T. H. Bridgewater, Grad. I.E.E., at University College, Gower Street, London, W.C.1, at 7.0 p.m. on Wednesday, March 8th. Cards of invitation can be obtained on application to Mr. J. J. Denton, A.M.I.E.E., 25, Lisburne Road, Hampstead, N.W.3.

A Simple Request

SMALL BOY: Father says please can you lend us your wireless set this evening?

Neighbour: With pleasure! Are you giving a party?

S.B.: No, we want to sleep.

Radio Service on Wheels

MESSRS. E. K. COLE, LTD., the radio manufacturers, have organised a body of specially trained engineers, provided with fully equipped motor cars, who will tour the country so that owners of EKCO instruments can command service at a moment's notice. A postcard to the makers, a few formalities, and an expert is on the set owner's doorstep.

Each engineers' squad, who will travel in a green and gold car, is provided with enough spare parts to make a number of complete wireless sets.

Choosing an Announcer

THREE hundred applicants—five of them women—competed for the post of announcer at Radio-Vitus, Paris. Among those applying was a winner of the French Prix de Rome (architecture), several doctors of laws, and more than one licentiate of literature. No fewer than 270 competitors were eliminated in the "first round." A third test whittled down the remainder to a dozen, from which a special jury will choose six to stand public examination at the microphone.

The final decision is to be arrived at by listeners' vote.

The Four Millionth

MISS GRACIE FIELDS received telegrams of congratulation from all corners of the globe on Tuesday of last week, when the celebrated comedienne personally pressed her four millionth record at the "His Master's Voice" factories, Hayes, Middlesex. The production of Gracie Fields' records alone has given employment to over 120 people for 4½ years.

If the recording track of her voice were unfolded it would reach over 800,000 miles, and statisticians further declare that, if all the records were played consecutively, it would take twenty-eight years.

Luxembourg

NEWS concerning the Luxembourg 200-kilowatt station is remarkably sparse, but, if reports *via* America are to be believed, the new transmitter will soon produce a real "shake-up" in the European ether.

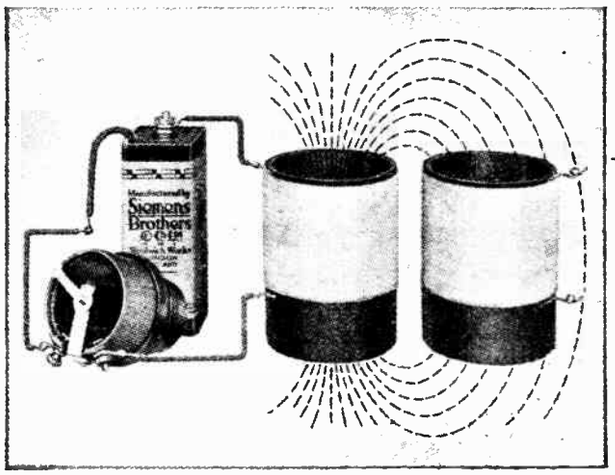
"A typical bit of America," enthuses a Washington writer, "will be transplanted to the Old World when this first 'international radio station' soon begins operation."

A report just received by the U.S. Department of Commerce from its Attaché at the Hague states that "commercial interests under the auspices of a Franco-German combine, plan to use the station from 8 a.m. to 2 p.m. daily as an advertising outlet, operating on the long wave length of 252 kilocycles.

Mutual Induction

The Theory of Coil Coupling Explained

By S. O. PEARSON, B.Sc., A.M.I.E.E.



WITHOUT a knowledge of the fundamental principles of mutual induction it is difficult to understand the theory of coil coupling. Mutual induction can be defined as that electro-magnetic property of two circuits (or two parts of a single circuit) by virtue of which a changing current in one causes an electromotive force to be induced in the other.

MUTUAL induction is an electro-magnetic property of two circuits so situated with respect to each other that a current in one sets up a magnetic field which is linked with both, that is to say, a property of two circuits which are magnetically coupled together. It is a fundamental principle that when the magnetic flux linked with a circuit is changing, an electromotive force is induced in the circuit, its magnitude being proportional to the rate of change. When the magnetic flux linked with a circuit is produced by a current in the circuit itself, then, if the current is varied, the flux will vary also and an E.M.F. is induced in the circuit proportional to the *rate of change* of current. This property of a single circuit is called self-induction. If, however, there are two circuits magnetically coupled together, as explained above, a variation of current in the one will cause a variation of the magnetic flux threading through the turns of the other and an E.M.F. proportional to the *rate of change* of current in the first will cause an E.M.F. to be generated in the other. This property is referred to as mutual induction.

A Definition

The first circuit, in which the current is varied, is called the *primary*, and the second, in which the induced E.M.F. is considered, is called the *secondary* circuit. As in the case of self-induction, the practical unit in which mutual induction is expressed numerically is the *henry*. The mutual inductance, or coefficient of mutual induction, between two circuits is said to be one henry if one volt is induced in the secondary circuit when the current in the primary is changing at the rate of one ampere per second. The mutual inductance in henrys is usually denoted by the symbol M and the induced E.M.F. in volts in one circuit is equal to the product of M and the rate of change of current in amperes per second in the other. The mutual inductance M is the same whichever of the two circuits is taken as the primary.

Degree of Coupling

As an example, consider two coils whose self-inductances are L1 and L2 henrys respectively placed in close proximity to each other as shown in Fig. 1. When a current is passed through L1 a magnetic field is established and some of the magnetic loops are linked with the second coil L2. Let M be the mutual inductance in henrys between the coils. Now if the current in L1 is varied by changing the value of the resistance R, the flux linked with L2 will be varied in proportion, and an E.M.F. will be induced in L2; the value of this secondary induced E.M.F. is equal to $M\dot{x}$ (rate of change of primary current). The degree of magnetic coupling obviously depends on the proximity and relative positions of the two coils and is expressed numerically as the ratio of the mutual inductance to the square root of the product of the individual self-inductances. This is called the *coefficient of coupling*, and is given by $k=\frac{M}{\sqrt{L_1L_2}}$, a number which cannot exceed unity, and which in practice never reaches unity. Coils are said to be tightly coupled when they are brought close together to give a relatively high value of M and k, and vice versa. The tightest coupling is obtained when the two coils are wound on the same former with the wires wound on side by side, but even in this case the coefficient of coupling is less than unity. The coefficient of coupling would be unity, or 100 per cent., if the whole of the magnetic flux produced by a current in one of the windings were completely linked with both windings, a condition which cannot be fully realised in practice, even when the coils are wound on an iron core.

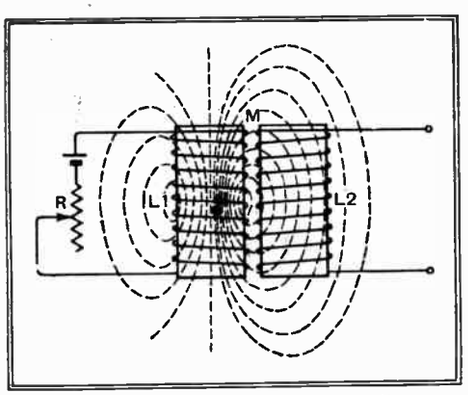


Fig. 1.—Magnetically coupled coils.

Transformer Principle Based on Mutual Induction

The A.C. transformer represents the commonest example of the practical use of mutual induction. A transformer consists essentially of two coils magnetically coupled together, their relative positions being fixed. In the case of low-frequency and power transformers, the primary and secondary windings are wound on a common iron core, so that the coefficient of coupling approaches 100 per cent., but for H.F. transformers the windings are usually carried on a non-magnetic former and are said to be "air-cored."

When an alternating current is sent through the primary winding of a transformer it sets up an alternating magnetic flux which, acting on the secondary winding, generates an alternating E.M.F. in the latter. The value of this E.M.F. can be found in terms of the mutual inductance, the frequency and the primary current, in the same way that the induced E.M.F. of self-induction can be found for a single coil. For instance, when an alternating current of I amperes is passed through a coil of inductance L henrys, the induced or back E.M.F. set up is equal to the product of this current and the reactance of the coil, namely, $I \times 2\pi fL$ volts, where f is the frequency and $\pi = 3.1416$. In the same way, if M is the mutual inductance in henrys between the two windings and I1 is the primary current, the induced E.M.F. in the secondary winding, with the latter on open circuit, is $I_1 \times 2\pi fM$ volts.

In the case of an iron-cored transformer, where practically every line or loop of magnetic flux is completely linked with every turn of both windings, it is obvious

Mutual Induction —

that, when the flux is alternating, the same E.M.F. will be generated in each and every turn of both windings, and from this it follows that the total E.M.F. in each winding will be directly proportional to the number of turns comprising each. So if N1 and N2 are the numbers of turns in the primary and secondary windings respectively, and if a voltage E1 is applied to the ends of the primary winding, the secondary voltage is given by the simple relationship $E_2 = E_1 \times \frac{N_2}{N_1}$.

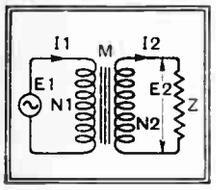


Fig. 2. — Circuit diagram of a transformer with the secondary loaded.

Secondary Winding Loaded

When a load impedance Z of some form is connected across the secondary terminals of a transformer, as in Fig. 2, a current flows in the secondary winding, and this in turn reacts back on to the primary winding through the medium of the mutual induction. And so the current taken by the primary winding will depend, not only on the impedance of the primary winding itself, but also on the amount of current flowing in the secondary, although there is no direct electrical connection between the windings. The extra current taken by the primary winding of a transformer when a current is allowed to flow in the secondary is exactly proportional to the secondary current, and these two currents have equal and opposite magnetic effects on the core, the extra primary ampere-turns just opposing the secondary ampere-turns, so that, apart from the initial magnetising current, $I_1N_1 = I_2N_2$, or $I_1 = I_2\frac{N_2}{N_1}$. This is just the reverse compared with the relationship for the E.M.F.s. So a transformer which steps the voltage up in a given ratio will step the current down in the same ratio, and vice versa. Consequently, the product of primary amps and volts is approximately equal to the product of secondary amps and volts for an ordinary iron-cored transformer, but these conditions do not hold for H.F. transformers where the coupling coefficient is considerably less than unity.

BOOKS RECEIVED

The Principles of Electromagnetism, by G. B. Moullin. — A text-book for advanced students, comprising the elements of magnetism, the second law of Electrodynamics, Iron in a magnetic field, Equations and Special Problems. Pp. 279 + viii, with 152 diagrams and illustrations. Published by the Oxford University Press, London. Price 17s. 6d.

Casque's Sketch Book, by S. C. H. Davis, the well-known racing motorist, who gives us in a collection of drawings an idea of racing as it might be and as, so often, it really is. Pp. 60. Published by Iliffe and Sons Ltd. Price 2s.

A Technical Description of Broadcasting House. Outlining some of the problems encountered in the design and construction of the building and the plant installed therein, with a general account and description of the architectural features, the acoustic treatment of the studios, power supply, studio and control room equipment, etc. Pp. 105+xii., with 72 illustrations, plans, and diagrams, and five plates. Published by the British Broadcasting Corporation. Price 5s.

ON THE SPOT

VISITS TO FOREIGN BROADCAST STATIONS

VI.—Radio Berlin No. 1 (Witzleben), 716 kc., 419 m., 1.5kW.

ALL Europe has heard of the great "Haus des Rundfunks" in Berlin. No fewer than three broadcasting organisations have their offices here, and two have studios. There is the Reichs-Rundfunk-Gesellschaft, which holds shares in all the other German regional companies, except the Bavarian; there is also the Funk-Stunde A-G. Berlin, controlling the local broadcasting, and the Deutschlandsender Company, responsible for the educational transmissions of Königswusterhausen.

Photo by courtesy of R.R.G., Berlin

The Witzleben aerial, supported at one end by the famous Radio Tower.

An unusual view of the short wave aerial at Königswusterhausen.

My theme is the Funk-Stunde, which operates Radio Berlin (Witzleben). The programmes to some extent reflect the trend of the times; economy is the watchword, for since April last two hundred thousand fewer listeners have paid licence fees. Even the cost of an O.B. line is a consideration, but the programme director continues very creditably with the limited resources at his disposal.

It is half an hour's journey on the underground from the centre of the city to Berlin's "Broadcasting House." The Witzleben transmitter is quite near to the studio, standing in the grounds of the radio exhibition. Strangely enough, although the Funk-Stunde is really a local concern, serving only the Berlin area, the organisation savours much more of red tape than does the Reichs Rundfunk-Gesellschaft, covering almost the whole of Germany! Until recently Funk-Stunde lacked the personal note, but happily the new director of programmes, although a busy man, can always spare the time to see an interested visitor.

The personal touch means much in broadcasting; in fact, it can in large measure atone for lack of funds. Under the new régime Berlin looks for an enlarged clientele in the near future.

WANDERING WAVE.

Part of the entrance hall of Berlin's "Broadcasting House."

New Automatic Bias Scheme

Self-bias for the Battery Variable-mu Valve

By E. G. BOWEN, M.Sc.

IT has now become usual to provide automatic bias for battery sets, and, as a natural corollary, controllable bias for a variable-mu H.F. stage is obtained in the same way. A method which has been described several times in this journal is illustrated in Fig. 1. A potentiometer is shunted across the main bias resistor and the H.F. grid circuit is returned to the slider of this potentiometer. In this way any desired proportion of the total bias voltage provided may be applied for purposes of controlling sensitivity.

This arrangement works satisfactorily in practice, but is open to criticism on the grounds that the H.F. valve may require a higher bias than the output valve, and that as the bias of the variable-mu is changed, so also is the total anode current. This has the effect of changing slightly the bias voltage on the output valve, which should, of course, remain constant.

By a simple rearrangement of the biasing resistances the deficiencies of the original circuit may be eliminated. The modified circuit is shown in Fig. 2, and the resistances have been chosen for a typical three-valve receiver.

Now, when maximum bias is applied to the variable-mu valve, the potentiometer slider is at A, the total anode current is, say, 9 mA., and the biasing resistance in circuit just 666 ohms (the fixed resistance of 2,000 ohms being shorted out)—giving a negative bias of $\frac{9 \times 666}{1,000} = 6$ volts on both output and high-frequency valves. When zero bias is applied to the first valve the potentiometer slider is at B, the total anode current is, say, 12 mA., and the bias resistance is $\frac{666 \times 2,000}{666 + 2,000} = 500$ ohms—giving again a bias of $\frac{12 \times 500}{1,000} = 6$ volts on the output valve. Using this circuit, the grid bias on the output valve remains constant at 6 volts, and the bias on the high-frequency valve may be varied over the full range 0 to 6 volts, as shown graphically in Fig. 2.

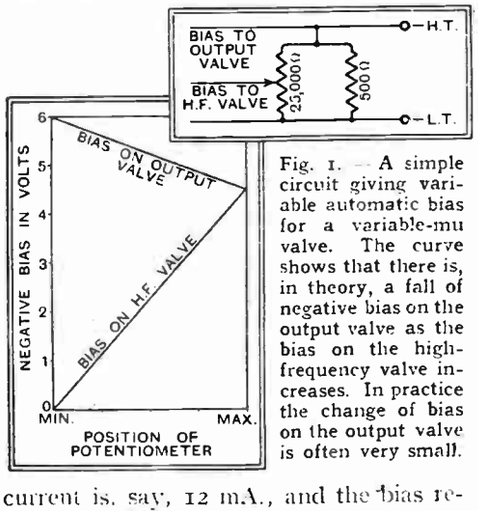


Fig. 1.—A simple circuit giving variable automatic bias for a variable-mu valve. The curve shows that there is, in theory, a fall of negative bias on the output valve as the bias on the high-frequency valve increases. In practice the change of bias on the output valve is often very small.

A variable resistance of 666 ohms is not a standard product, but any two resistances, one fixed and one variable, when arranged in parallel and equivalent to a single variable resistance of 666 ohms will do. The final circuit is shown in Fig. 3.

THERE is a definite tendency among constructors of battery sets to follow mains practice and provide automatic bias for both H.F. and L.F. valves. A new bias scheme is described in this article which overcomes the difficulties hitherto associated with battery variable-mu valves.

It is quite simple and cheap to construct and has very definite advantages over that of Fig. 1.

With the improvement in the efficiency of output valves there has been a gradual decrease in the amount of bias applied to them. A modern small pentode may need only from 3 to 4.5 volts negative bias so that cases will arise in which it is necessary to apply a greater bias to the high-frequency valve than to the output valve.

Consider a receiver whose total anode current may vary from 7 to 10 mA. and whose output valve requires a bias of −4 volts. If a maximum negative bias of 10 volts is required on the high-frequency valve the circuit shown in Fig. 4 may be used.

A potential of 10 volts must be maintained between A and B, so that when the slider of the potentiometer is at A maximum bias is applied to the variable-mu valve and the total anode current of 7 mA. flows. This requires a bias resistance of $\frac{10 \times 1,000}{7} = 1,430$ ohms, which may conveniently be made up of a 2,000 ohm potentiometer AB with a resistance of 5,000 ohms in parallel. This, in turn, should be split into resistances of 2,000 and 3,000 ohms as shown, giving a tapping point from which the fixed bias of 4 volts negative is led off to the output valve.

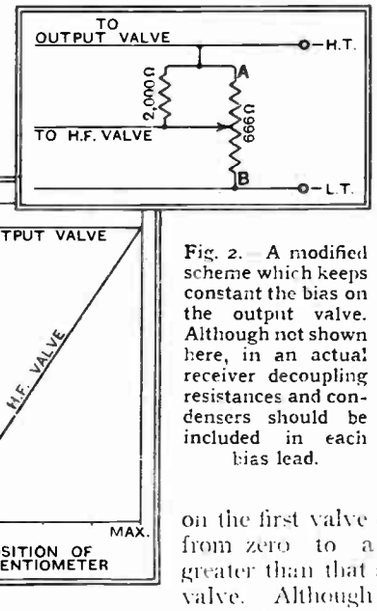


Fig. 2.—A modified scheme which keeps constant the bias on the output valve. Although not shown here, in an actual receiver decoupling resistances and condensers should be included in each bias lead.

When the potentiometer slider is at B minimum bias is applied to the high-frequency valve, a total anode current of 10 mA. flows and the total biasing resistance is $\frac{1,430 \times 3,000}{1,430 + 3,000} = 993$ ohms, across which practically a full 10 volts is developed. The result is shown graphically in Fig. 4, and it will be seen that the bias on the high-frequency valve may be varied over a range of 10 volts, while the output valve receives a negative bias which remains practically constant at 4 volts.

This curve is perhaps the ideal for a battery receiver employing a variable-mu valve. The bias on the output valve remains fixed, and the bias on the first valve may be varied at will from zero to a negative potential greater than that applied to the output valve. Although no decoupling resistances and condensers are shown in the diagrams given above, in practice they should always be included to prevent undesirable coupling between the stages.

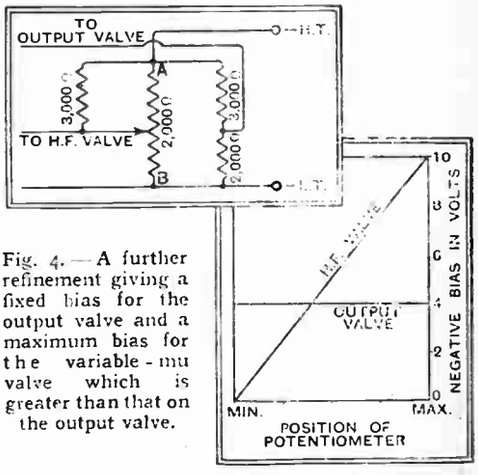


Fig. 4.—A further refinement giving a fixed bias for the output valve and a maximum bias for the variable-mu valve which is greater than that on the output valve.

As far as possible the conditions chosen for these examples are those likely to be met with in practice. But the values of the resistances given above can easily be modified to suit practically any combination of valves in a battery receiver, even if two variable-mu types are used.

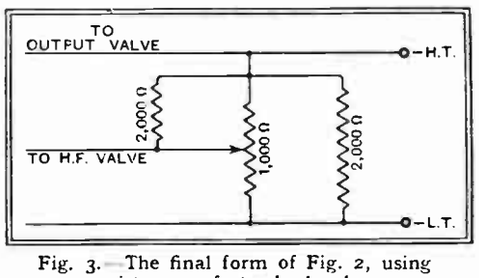


Fig. 3.—The final form of Fig. 2, using resistances of standard value.

Lotus FOUR-VALVE A.C. Receiver

An Inexpensive Set with Two H.F. Stages

IN the Lotus "2-H.F." model we have an example of a type of set which competes quite successfully with the more popular type of H.F.-det.-L.F. three-valve receiver. It is rather more ambitious, but includes only the three tuned circuits which have become almost standardised for general-purpose use. The cost of a receiver is largely determined by the number of these tuned circuits, and there are sound technical grounds for saying that by using two of them as intervalve couplings, rather than as elements of a band-pass filter, it is easy to obtain rather better selectivity and sensitivity without incurring much extra cost in other directions. The introduction of variable-mu valves has almost entirely removed the objections that were once urged against the simpler type of "2-H.F." receiver.

Starting at the input end of the Lotus set there is a special form of H.F. choke which is intended to prevent "break-through" of local medium-wave signals at the lower end of the long band. Double-wound transformers are used throughout for aerial-grid and intervalve coupling, and an external trimmer has been fitted for the input circuit in order to compensate for variations in aerial capacity.

It is worth while noting that the two H.F. valves are of different types, that in the second position having a somewhat higher mutual conductance than the input valve.

The H.F. amplifier output is passed to another screen-grid valve acting as an anode-bend detector; this valve is self-biased by means of a cathode resistor, and a simple resistance-capacity filter is inserted next to its anode to dispose of H.F. energy in this circuit.

Coupling between the detector and the output pentode is effected by another resistance-capacity combination of fairly conventional design. Anti-reaction feedback of L.F. energy in this circuit is prevented by shunting the output bias resistor with a 50-mfd. dry electrolytic condenser.

In the anode circuit of the pentode there is the usual tone corrector, consisting of a resistance and condenser in series. But the resistance, instead of being fixed, is variable, and in this way a very simple but effective form of tone control has been provided. Although this refinement may not be strictly necessary, it is certainly of great assistance in avoiding certain forms of interference; not only will it enable many heterodyne whistles to be avoided, but certain forms of electrical interference can be reduced in intensity by judicious operation of the control.

In the H.T. supply circuit another electrolytic condenser—this time of the "wet" type—is employed in conjunction with the loud speaker field for smoothing the output of a Westinghouse rectifier connected in a voltage-doubling circuit. Power supply is quite generous; after allowing for the loss in energising the loud speaker field, some 240 volts are left for the valve anodes, screens, and the regulating potentiometer, which together consume about 60 milliamperes.

Due to the inclusion of the anti-break-through choke already mentioned, and also because precautions are taken to prevent another form of break-through when a gramophone pick-up is employed, the switching system is necessarily somewhat complicated. Apart from having to perform these and the other usual functions, it controls a pair of indicating pilot lamps which illuminate the

FEATURES

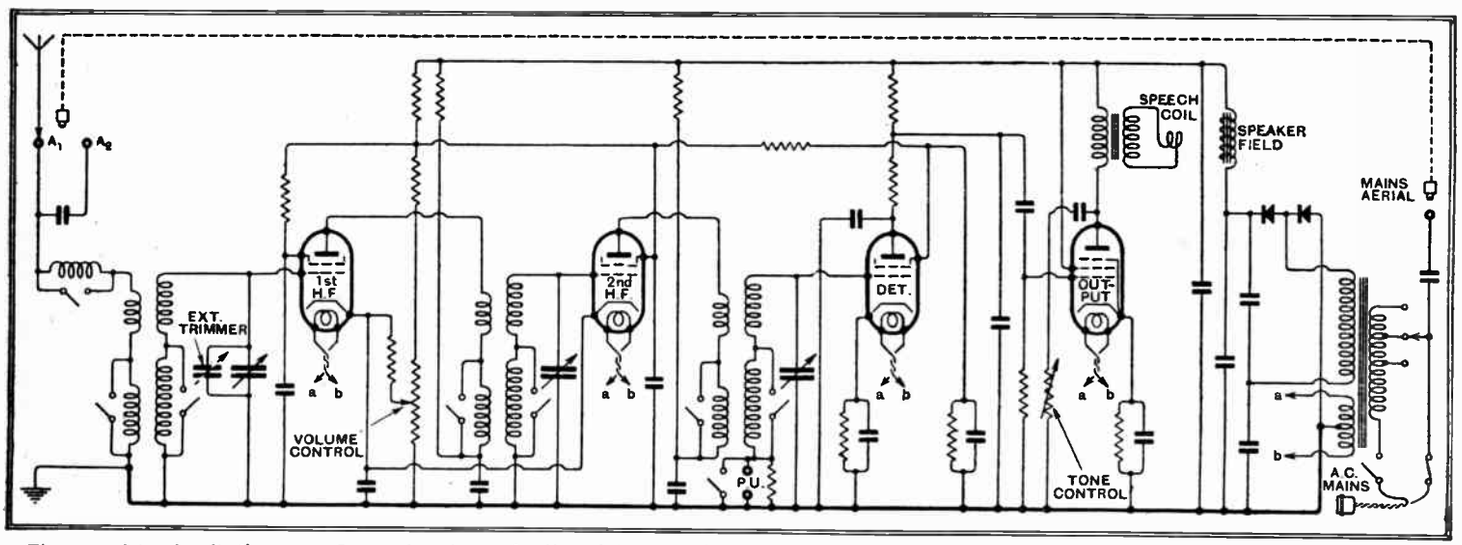
General.—*A self-contained four-valve receiver for A.C. mains supply and for operation with either external aerial-earth system or with an internal or mains aerial. Energised moving-coil loud speaker. Provision for gramophone pick-up.*

Circuit.—*Single-tuned input circuit, two H.F. stages, anode-bend S.G. detector, resistance-coupled to output pentode. Transformer feed to loud speaker. Westinghouse metal rectifier.*

Controls.—*(1) Ganged tuning. (2) Combined on-off, wave-range, and radio-gramophone switch. (3) Input volume control. (4) Tone control.*

Price.—*15 guineas complete.*

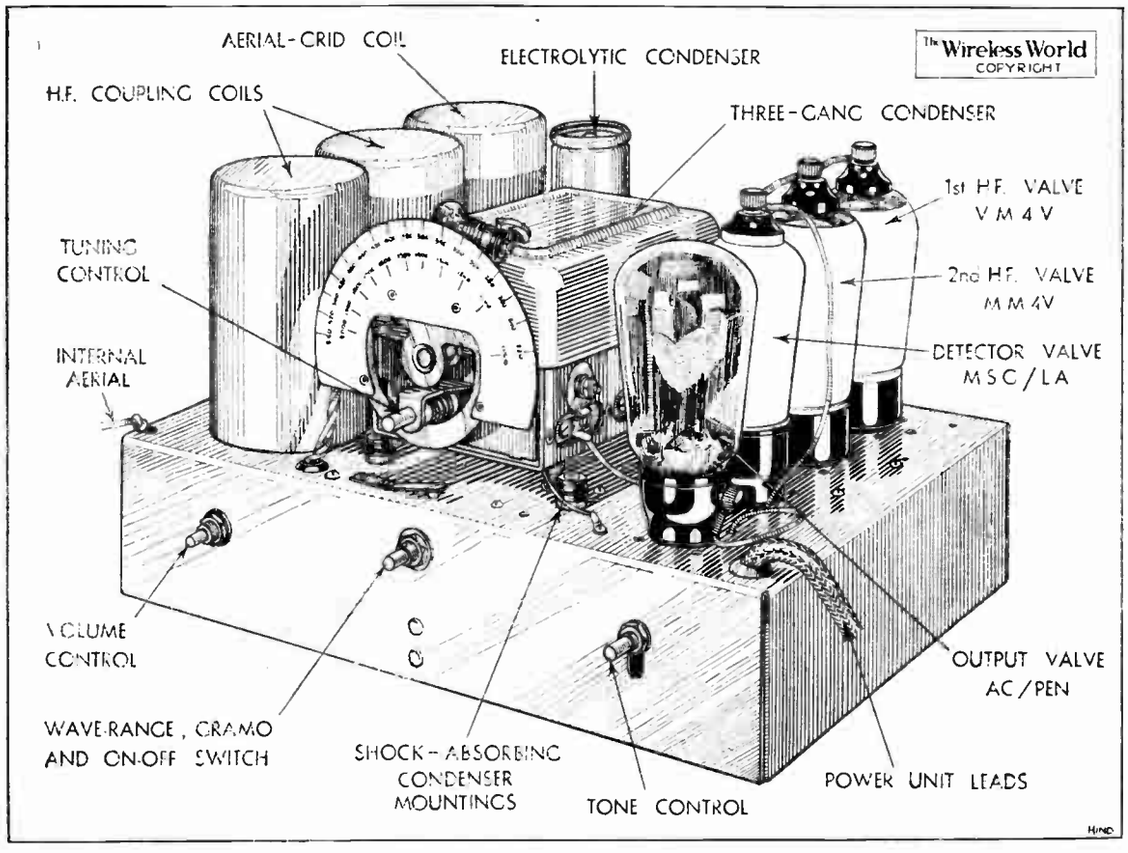
Makers.—*Lotus Radio, Limited, Lotus Works, Mill Lane, Liverpool.*



The complete circuit diagram. Internal and "mains" aerial connections are shown in dotted lines. All change-over switches are mechanically linked, and for gramophone reproduction the various circuits are automatically switched to different wavebands to prevent radio interference.

Lotus Receiver—

appropriate section of the wave-length-calibrated tuning dial. It is therefore reassuring to find that the switch mechanism is soundly designed, and, in spite of the multiplicity of contact points, it looks as if it were capable of standing up to its work indefinitely.



The receiver chassis, which is fitted in the cabinet on shock-absorbing rubber mountings.

Constructionally, the Lotus set is interesting on account of the unusually extensive precautions taken to prevent the transmission of vibration from the loud speaker to other components. Not only is the loud speaker itself mounted by means of shock-absorbing rubber bushes, but the entire chassis is mechanically insulated from the cabinet in a similar way. Further, rubber insulation is provided for the ganged variable condenser.

The general arrangement of the set is somewhat unusual. To the backing board on which the loud speaker is mounted are secured all the components associated with the power supply equipment—transformer, rectifier, etc. Interconnection between this unit and the receiver proper is made by a multiple cable and an irreversible terminal strip. For purposes of test or repair, the two units may be divided up by removing screws, without the need for unsoldering connections. This is a good point, and should tend to facilitate testing and repairs. Similarly, the loud speaker and power unit are readily removable as a whole.

An internal aerial is provided in the form of a long lead, which, if desired, may be connected through a built-in condenser to the mains supply if it is found more satisfactory to use a "mains aerial."

In a set of this type, with a total of three tuned circuits, it would be injudicious to make any attempt to extract the maximum possible amplification from each of the H.F. stages. As a result of an extended test, the conclusion is reached that a particularly happy compromise between conflicting requirements has been effected; although sensitivity could have been made greater, range is considerably better than that of the average H.F.-det.-L.F. three-valve set, and selectivity is also superior. This means that the set is definitely in the long-range class, and it proves itself capable of supplying a wide choice of programmes even when receiving conditions are not of the best.

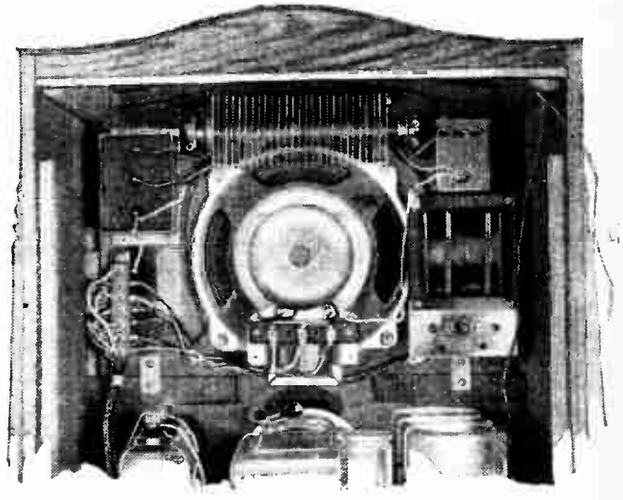
In comparing a three-circuit "2-H.F." set with a 1-v-1 having the same number of circuits, one must not forget that the former yields its results in a comparatively effortless manner; the absence of a reaction control, which always needs more or less critical adjustment, is an important factor in favour of the Lotus set. Practically no skill or special ability is needed to obtain the utmost performance of which it is capable. Except for a slight tendency towards self-oscillation at maximum volume settings near the lower end of the longer waveband, the veriest beginner will encounter nothing that is likely to disturb or puzzle him. Even this tendency is easily checked by a slight adjustment of the volume control knob.

During our tests, interference of the avoidable sort hardly ever gave trouble, and one could not reasonably expect better selectivity from any set at a comparable price. Where necessary, tuning may be sharpened (but at the expense of signal strength) by making use of the "A2" aerial socket, but it was seldom that this adventitious aid to selectivity had to be brought into use.

The most striking fact about the quality of reproduction is the exceptional response towards the top end of the upper register. Brass instruments are reproduced with a degree of realism that, to say the least, is unusual. The behaviour of the set in this respect came rather as a surprise, as there is nothing in the general circuit arrangement that would lead one to anticipate an exceptional response in the upper register.

With regard to the lower and middle register, reproduction is also satisfactory; a bass resonance becomes audible at maximum volume, but disappears at "ordinary room" level; indeed, an attractive feature of the set is the pleasing and realistic quality that is obtainable at low volume—under conditions where the average receiver begins to show a distinct falling-off. Generally speaking, there is a commendable absence of roughness and harmonic distortion.

The constructional booklet supplied with the set contains a complete circuit diagram containing a great deal of useful information; in this respect it is well ahead of the average publication of its class. All too often, essential technical information is lacking.



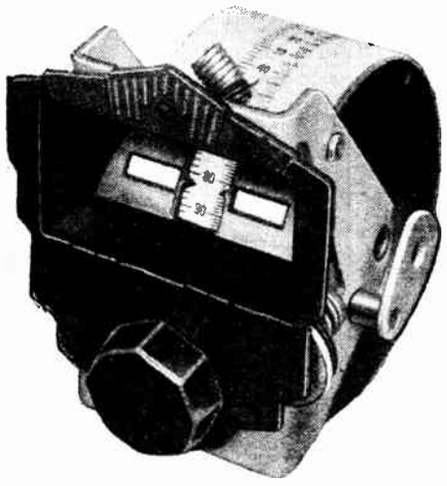
Loud speaker and power supply equipment are assembled on the baffle board, and may be removed *en bloc* as a unit.

LABORATORY TESTS

NEW ORMOND DRUM DRIVE

THE new condenser drive recently introduced by the Ormond Engineering Co., Ltd., Ormond House, Rosebery Avenue, London, E.C.1, is fitted with a drum of sufficient width to accommodate the names of stations on each side of the 0 to 180 division scale. The drum is 4in. in diameter, and carries a scale nearly 6½in. long, so that ample space is available for logging the principal European broadcast stations.

The dial is exceptionally robust, and will drive a chain of condensers without the slightest trace of slip or backlash. These can be mounted on either side, thus permitting the dial to occupy a central position on the panel with the condensers conveniently placed and adjacent to their respective coils. It is driven through a reduction gear of 5.5 to 1 approximately, and is known as the Ormond Logging Drum Dial.



Ormond logging drum dial fitted with engraved scale and space for station names.

A cleanly moulded bakelite escutcheon plate is provided, also a lampholder for illuminating the scale, and the price is 7s. 6d.

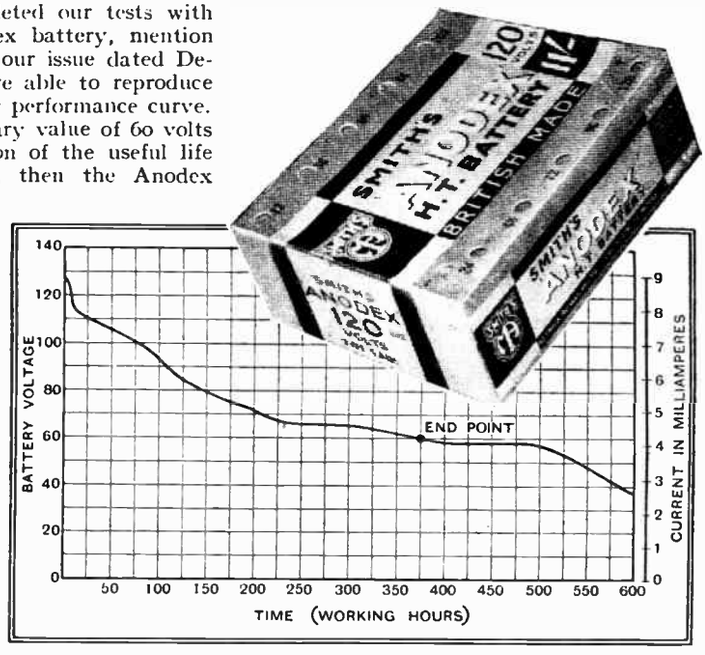
SMITH'S ANODEX BATTERY

HAVING now completed our tests with the Smith's Anodex battery, mention of which was made in our issue dated December 9th last, we are able to reproduce here a most satisfactory performance curve. If we accept the arbitrary value of 60 volts as being the termination of the useful life of a 120-volt battery, then the Anodex model will provide some 375 working hours, or fifteen weeks of normal use.

It can be seen from the discharge curve that this does not coincide with the natural cut-off point which is quite well defined at the 500-hour mark. During the subsequent 125 hours the voltage is maintained at only a very slightly lower level than the theoretical end-point value. In view of the well-maintained output from the 200-hour mark to the natural end-point of the battery it might well be worth while to consider the purchase of a small boosting battery after the unit has been in use for about two months—a 60-volt size will suffice. With the help of this the H.T. supply could be maintained at a fairly constant value of about 100 volts for a further period of approximately four months at a very small extra cost.

Few batteries tested have maintained their voltage at such a high level for so long as this Anodex model, or exhibited such a long useful life, more especially as it does not fall in the expensive category, for the price of the 120-volt size is but 11s.

The makers are S. Smith and Sons (Motor Accessories), Ltd., Cricklewood Works, Cricklewood, London, N.W.2.



Discharge curve of Smith's Anodex 120-volt dry cell H.T. battery.

NEW RADIO PRODUCTS REVIEWED

RECTIFIERS H.T. UNITS

AN H.T. battery eliminator, described as the "Q" 20 model, for use on A.C. mains, and giving a total output of 20 mA., is now obtainable from the makers, Rectifiers, Ltd., Brierley Street, Leicester. It provides three separate output voltages, namely, 60 volts at 3 mA. for the detector, 80 volts at 1 mA. for screen potential of S.G. valves, and 135 volts at 16 mA. for the power stage. These are not just nominal values, but as near as no matter the actual voltages that will be obtained under working conditions, as we have verified by tests made with a specimen unit.

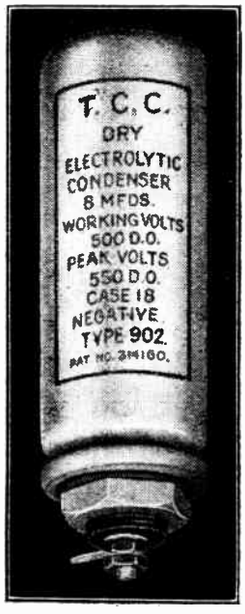
The 20-mA. model suffices for the majority of receivers hitherto battery operated, and is in every respect a satisfactory substitute. There is very little mains hum, and since separate resistances are used to drop the volts at the intermediate tappings, additional anode decoupling is not likely to be required.

The makers list also another unit, rated to give 30 mA. output and designated the "Q" 30 model. The price is 50s. Both units embody Westinghouse metal rectifiers.

Rectifiers "Q" 20 model H.T. battery eliminator giving a maximum output of 20 mA. at 135 volts.

T.C.C. DRY ELECTROLYTIC CONDENSER

AN 8-mfd. size high-voltage dry electrolytic condenser is now obtainable from the Telegraph Condenser Co., Ltd., Wales Farm Road, North Acton, London, W.3. It is mounted in a tubular aluminium container with the connections so arranged that when assembled on a metal chassis the polarity of the condenser is correct, the case being the negative connection. The positive contact is brought out through an insulated bush which serves also to carry the large fixing nut.



T.C.C. 8 mfd. dry-electrolytic condenser rated at 500-volt D.C. working.

The working potential of this model is 500 volts D.C., and the leakage current is stated by the makers to be less than 0.35 mA. On test we found the initial leakage to be about 2 mA., but it fell within a few minutes to half this value, and thence much more slowly until finally only a fraction of a milliamp. was passing. The price is 9s.

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Trade Notes

W. Bryan Savage, 292, Bishopsgate, London, E.C., has now moved into a new model factory at 56-58, Clerkenwell Road, London, E.C.1. The goods entrance is at 25-27, Great Sutton Street.

Additional showroom premises on the ground and first floors of 4, Surrey Street, Strand, have now been taken over by the City Accumulator Co., the offices and works remaining as hitherto at 7, Angel Court, Strand, London W.C.2.

BROADCAST BREVITIES

By Our Special Correspondent.

Another Wave for Britain ?

ALTHOUGH all doors were sealed at the special meeting at Brussels of the technical committee of the International Broadcasting Union, concluded on Saturday last, I understand that Mr. Noel Ashbridge and Mr. Hayes, representing the B.B.C. and the interests of British listeners, fought a brave battle to secure an extra medium wavelength for this country.

As all the world is supposed to know, but doesn't, the committee was planning proposals, to be submitted before the European postal administrations in May next, for a more or less thorough revision of the Prague Plan.

Not at Inverness

If, as seems likely, Britain secures another wavelength, the B.B.C. will probably build an additional station, though I am less sure than are certain Scottish advocates, that its locality will be Inverness. I should be the first to agree that the North of Scotland has been poorly served by the B.B.C. in the past but, considering the smallness of the population north of the Caledonian Canal, I feel it would be a waste of a good wavelength to set up a main station in a locality which could quite reasonably manage with a relay.

"Scrap the Nationals"

On the other hand, no one would grudge Inverness a wavelength of its own if the new "scrap the Nationals" campaign were successful. The idea is that with 100 kilowatts being radiated from the Droitwich station, the medium-wave National transmitters at Brookmans Park, Moorside Edge and elsewhere would be superfluous, and should therefore be scrapped.

Pros and Cons

Mr. Ashbridge, I understand, is not the sponsor of such a scheme, though it has certain arguments in its favour, not the least important being the opportunity it would give to use the released wavelengths in remote parts of the country which otherwise would still be inadequately served.

But I cannot imagine London taking its National programme from far-away Droitwich, and sitting content.

Sir Henry Wood

NO human activity seems to gather unto itself more rumours and counter-rumours than broadcasting, and I could probably fill a page each week with refutations alone. Take this story of Sir Henry Wood and the move to displant the *Maestro* at the "Prom" concerts in favour of one of the B.B.C.'s own conductors.

At Headquarters I am solemnly advised that the tale contains no truth whatever. For the sake of getting such an assurance I am almost glad that the false rumour appeared.

The Assistant-Controller

ADMIRAL CARPENDALE, Assistant-Controller of the B.B.C., has spent part of his "summer holiday" in Switzerland before proceeding to the U.I.R. technical meeting in Brussels.

The Empire Response

DISCONTENT with the Empire news bulletins is strongly evinced in many of the letters which the B.B.C.'s new circle of listeners are sending to Broadcasting House. In a batch which I inspected last week there was the repeated request for news about British weather. "Tell us what sort of a day you have had in London" is the refrain sounded from places as far apart as Cape Province and Ontario.

Technical Triumph

But, despite some dissatisfaction with the present programme scheme, Empire listeners are almost unanimous on the technical success of the service.

"Almost perfectly received" writes a New Zealander. "Thoroughly satisfactory" exclaims a Beersheba (Palestine) resident, who, incidentally, is outside any particular zone, and can pick up three Daventry transmissions without difficulty!

Even Canada has been more satisfied of late.

SOMETHING WRONG? Criticism of the B.B.C. News Bulletins is not confined to this country. Recent letters from the Empire indicate that the B.B.C. bulletins lack verve and are unsuited to listeners' needs. The photograph was taken in a news studio at Broadcasting House.

Bombardier Wells To-morrow

THE sports talk to be broadcast to-morrow (Saturday) will be given by Bombardier Billy Wells, and will be entitled "Boxing: Giants of Yesterday and To-day." Billy Wells was heavyweight boxing champion of Great Britain, 1911-1919.

Chance for Spring Poets

NEARLY two hundred poems addressed to the Prince of Wales have been received at Broadcasting House. They are part of listeners' contribution of a total of more than 2,000 poems submitted in response to the B.B.C.'s enquiry for original works for broadcasting as late evening readings. Poems have come from many parts of the world, and the topic chosen by the largest number of aspirants to broadcasting fame is LOVE.

Safer Course ?

And why does the B.B.C. want your poems? I will tell you. The Corporation, being anxious to broadcast poetry late at night, would like to send out listeners' own compositions, though I understand that there is no intention to evade responsibility in the matter.

Five Days More

Listeners are accordingly invited to submit poems for consideration, and this invitation extends until February 28: poems received after this date cannot be considered. Poems must be original and hitherto unpublished compositions; there is no restriction of subject, but no poem should be sent in which cannot be read within the space of five minutes, and not more than three poems should be sent in by any one listener.

Envelopes should be marked "Poetry."

Stretcher-bearers!

I USED to think that the uniformed nurse so often to be seen flitting about Broadcasting House was there to administer to minor aches and pains. The duties are sterner, however, and include the treatment of broken limbs and possibly necks, for the casualty list is high. Slippery stairs and sharp, unexpected corners have brought about the downfall of many athletic young persons on the B.B.C. staff, and no one knows whose turn will come next.

Miniature Opera

TWO miniature operas by Mozart are to be produced by Gordon McConnel in the National programme on March 17th (Regional, March 18th). They are the lyric pastorale, "Bastien and Bastienne," and the comedy opera, "The Impressario," the English adaptation being by Eric Blom. Dr. Adrian Boult will conduct the B.B.C. Orchestra, Section C (thirty-eight players).

Mr. Malcolm Frost

I AM sorry to hear that Mr. Malcolm Frost, the B.B.C. Empire "Ambassador," has not thoroughly recovered from his attack of malaria at Capetown. The world tour is being cancelled, at any rate for the present.

Leave Mr. Gill Alone!

THE hundred per cent. efficient persons are beginning to rail at Mr. Eric Gill for spending so long on the statuary over the porch of Broadcasting House. Apparently it "isn't business," even if you happen to be one of the finest sculptors in Europe, to take too long over one job.

I am glad Mr. Gill refuses to be rushed.

Long-lived Statuary

Mr. Gill knows that Broadcasting House has been built to outlast the century; he wishes his statuary to do the same, so why should he hurry himself?

By the way, I have talked to more than one man who, from wincing at the small bas-reliefs by Gill on the sides of Broadcasting House, now gazes at them with growing pleasure.

READERS' PROBLEMS

THESE columns are reserved for the publication of matter of general interest arising out of problems submitted by our readers. Readers requiring an individual reply to their technical questions by post are referred to "The Wireless World" Information Bureau, of which brief particulars, with the fee charged, are to be found at the foot of this page.

Reaction Circuit Connections

THERE need be no hesitation in mounting a reaction condenser in the most convenient operating position. Even though this procedure may necessitate long connecting leads, all risk of instability may be avoided by shielding these wires.

Similarly, when there is any suspicion that instability is due to long reaction leads, the experiment of shielding these leads may be tried with confidence; the effect of doing so is most unlikely to be in any way prejudicial to the operation of the set.

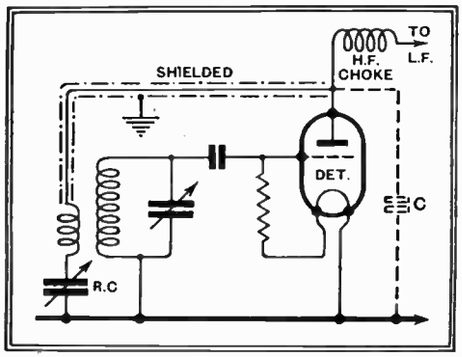

Fig. 1.—The use of a screened lead for the reaction circuit connection has no other effect than the addition of a small capacity (C) between detector anode and earth.

This is in answer to a correspondent who finds that his "2 H.F." set can be stabilised by disconnecting the reaction control circuit; he has satisfied himself that the trouble is not due to the use of a reaction condenser with an excessively high minimum capacity.

This correspondent goes on to ask whether the use of a screened lead to the reaction coil and condenser is likely to have any untoward effects; he is particularly anxious to know whether the extra capacity of the shielded connection is likely further to restrict the tuning range of the receiver.

We would certainly recommend him to try the effect of shielded connections. He can rest assured that the tuning range of the set will not be restricted; in effect, the capacity of a shielded lead from the detector anode will be additive to that already existing between the anode of the detector valve and earth. In this position, a capacity in the neighbourhood of 0.0003 mfd.—much more than that of a shielded lead—is likely to be actually beneficial.

The use of a shielded lead between the reaction coil and the "live" side of the reaction condenser will increase slightly the minimum capacity of the condenser; this is most unlikely to prove an unsurmountable drawback.

Erratic Volume Control

DESCRIBING the operation of his volume control, a correspondent tells us that loudness of reproduction is increased progressively until the potentiometer slider reaches a point a few degrees from the end of its travel. After this point there is a slight, but clearly perceptible, falling-off in volume.

A variable-mu valve is used in the receiver, and, according to a circuit diagram submitted by our querist, volume control is effected in a fairly conventional way by variation of the bias applied to this valve. But the usual limiting resistance has been omitted, with the result that when the potentiometer slider is at the "maximum" position, the grid is at zero potential, or at the same potential as the cathode.

This explains the effect described, and we think there can be no doubt that the falling-off in sensitivity is due to the flow of grid current, which imposes a certain amount of damping on the input circuit. As a general rule, maximum sensitivity will be obtained when the grid of the H.F. valve is made just sufficiently negative to prevent the flow of grid current.

"Monodial" Heater Voltage

IN the "A.C. Monodial," current for the indirectly heated valves in the receiver unit is fed through fairly long leads from the power supply unit; it is therefore a matter of some importance that the ohmic resistance of these leads should be low, and, accordingly, in order to prevent undue loss of voltage, two pairs of parallel interconnecting wires were employed. The resistance of these leads is so small that the drop in voltage should amount to very little more than a tenth of a volt, which is negligible.

A reader tells us that he has borrowed a dependable A.C. voltmeter, and finds that the voltage existing across the heaters of his own "Monodial" amounts to very little more than 3.6 volts; he goes on to say that the L.T. voltage measured directly across the transformer terminals is rather over than under 4 volts. He asks whether this indicates an excessive loss of voltage.

We are afraid that it does, and we advise him to lose no time in replacing the inter-unit L.T. leads by others of considerably greater cross-sectional area.

Paralleled Transformer Windings

IT is hardly to be advised that two or more of the separate L.T. windings of a power transformer should be connected in parallel. If the "sense" of the two interconnected windings be incorrect, they would act more or less as a short-circuit, and there is a grave risk that the transformer would be burnt out.

Information on this subject is asked for by a reader who wishes to feed six indirectly heated A.C. valves from an existing transformer which has one L.T. winding rated at 4 volts 4 amps., and another at 4 volts 2½ amps. His proposal is to connect all the heating elements of the valves across these two windings after they have been joined in parallel.

Rather than run the risk of damaging his transformer, we suggest that four of the valves should be fed from the 4-amp. winding, and the remaining two from the other. The centre taps of both windings will, of course, be joined to the common earth line in the usual way.

Coupling Condenser Capacity

JUDGING from letters that have recently been received, there appears to be some uncertainty as to the precise effect of using, in a resistance-capacity amplifier, a coupling condenser of smaller capacity than is usually specified. The condenser in question is that marked C in Fig. 2.

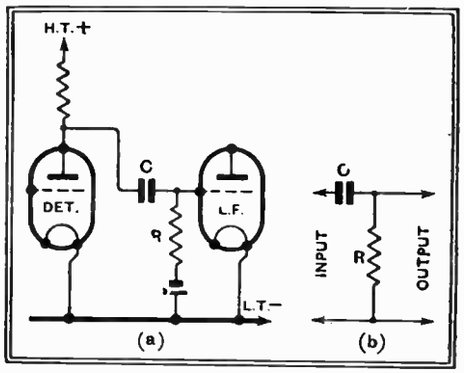

Fig. 2.—A resistance-coupled stage, and (diagram b) the equivalent circuit to show the effect of the coupling condenser.

Used in this position, too small a condenser will have the effect of attenuating proportionately the lower register in relation to the higher audible frequencies.

This is easy to understand if one regards the coupling condenser and its associated grid leak (R in the diagram) as a potential divider connected across the source of input voltage—in this case the anode circuit of the preceding valve. The equivalent circuit, so far as these components are concerned, has been redrawn in Fig. 2 (b). Voltages developed across the condenser are wasted, and only those developed across the grid leak are passed on to the succeeding valve to do useful work.

Now the reactance of a condenser varies with frequency, and the proportion of signal voltage dissipated (and wasted) across the condenser limb of the potentiometer is much greater for low notes than for high; frequency distortion is in this way introduced unless the condenser has a sufficiently high capacity in relation to the grid-leak resistance.

The Wireless World

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THE service is intended primarily for readers meeting with difficulties in the construction, adjustment, operation, or maintenance of wireless receivers described in *The Wireless World*, or those of commercial design which from time to time are reviewed in the pages of *The Wireless World*. Every endeavour will be made to deal with queries on all wireless matters, provided that they are of such a nature that they can be dealt with satisfactorily in a letter.

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- Power Amplifiers suitable for DANCE HALLS, SPORTS MEETINGS, FETES, ETC.
- The most up-to-date apparatus for outdoor or indoor sound reproduction and Radio reception.

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Manchester Branch:—
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Scottish Agents:—
Messrs. Spensers (Scotland) Ltd. 119, George Street, Edinburgh

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RECEIVERS FOR SALE.

HIRE a McMichael Duplex Portable; 15/- weekly, £2/12/6 monthly; amplifiers for dances, etc., on hire.—Alexander Black, Wireless Consultant, 55, Ebury St., S.W.1. Sloane 1655. [0328

EXPERIMENTERS' Surplus, all perfect condition.—H.M.V. 551B electric reproducer, cost £105; "W.W." Straight 5 receiver chassis only, fitted tone control stage; amplifier for same; Garrard automatic record unit, latest, new, cost £10; cabinet as specified, walnut, fitted complete, perfect; Colvern coils, superhet., K.B.L.C., Colverdynes, K.C.R., etc.; Haynes single dial superhet. receiver chassis, latest; quantity mains sundries; all above as new; best cash offers wanted; with or without valves; no approval, but any test welcomed here. Hill, Dentist, Ashton-in-Makerfield. 'Phone: 178. [1894

OSTAR-GANZ Combined A.C. and D.C. Receiver, in modern walnut cabinet, with Rola M.C. loud-speaker, unboxed, list price £12/12, our price 2 valves £5; 3 valves £6/10; c.o.d., carriage paid; state voltage.—Kay, 167, City Rd., Finsbury, E.C.1. [1632

APPLEBY'S, Central London Office, 46, Bloomsbury St., New Oxford St., London, W.C.1. Museum 8195. [1833

PYE M.M., slightly used, perfect order, 200-250v. A.C.; sacrifice, £8/10.—Box 6156, c/o *The Wireless World*. [1934

TELSEN Maenamara, nearly new, A.C. 200-250v., perfect order, guaranteed; £7/15.—Box 6157, c/o *The Wireless World*. [1935

£16/10.—8-valve A.C. electric radio, long, short wave, M.C. speaker, handsome walnut cabinet, as brand new, cost £47/10.

£5.—5-valve A.C. electric gramophone amplifier complete, suit radio shop, as brand new.—57, Clarissa St., Haggerston. [1921

1933 McMichael Supersonic Short Wave Receiver; cost £15, sacrifice £10.—Crowter, 15, King's Parade, Brighton. [1918

MARCONI Power Amplifier, 4/10 valves, input, radio, gramophone and microphone, 22in. public address speakers, D.C. mains unit, suitable for cafe, dance hall, or public address; nearest offer £50.—Oaksford, Alfreton Rd., Sutton-in-Ashfield. [1906

JUNIOR Tannoy All-electric 3-valve Console; cost 30 guineas, take 11 guineas.—Box 6142, c/o *The Wireless World*. [1900

S.T.400 Constructed Pilot Author Kit, tested by Peto-Scott, perfect order, with valves, no cabinet; £6/17/6.—Box 6140, c/o *The Wireless World*. [1898

TANNOY Radiogram; cost 55 guineas, take £30.—Box 6141, c/o *The Wireless World*. [1899

QUIESCENT Push-pull Conversion Kit, including 2 Mazda P.E.N. 220A., Bryce specially matched transformers (5 years' guarantee), milliammeter, Lewcos potentiometer, Eric resisters, Peak condensers, complete equipment for conversion with wiring diagrams; £3/9; lists and diagrams free.—Woods Radio, Holcombe Brook, near Bury. [1896

A.C. Decca Radiograms, original cost £95, incorporating L.S.5a output (approximately 6 watts), wonderful tone and power, solid oak cabinet, but requiring slight adjustment, parts, etc.; at clearance price £6/10 each; callers only.—W. Burns and Co., 287, City Rd., E.C.1. [1958

HAYNES' Brand New Single Dial, superhet, battery; £6/10.—Brown, 14, Haldon Rd., Exeter. [1964

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A.C. MONODIAL - £29.10.0
D.C. MONODIAL - £30. 0.0
All-Wave Battery Model - - - - £23. 8.6
Straight Five Receiver £28.15.0
Specially recommended—
A.C. MONODIAL with Straight 5 Output - - - £34. 0.0
Modern Quality Amplifier - - - £22. 0.0
All prices inclusive of valves, royalty and complete assembly—but excluding speakers and cabinets, which will be supplied to individual requirements.

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Old Type Sets reconstructed, remodelled and brought up to date with band-pass Tuning and Q.P.P. for Battery Receivers, etc.

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Telephone No.: Tudor 5326.

Contractors to H.M. Government Departments, Crown Agents for the Colonies, Electricity Corporations, etc.

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A.C. 3-stage Amplifiers, using L.S.6a or 2L.S.5a, in heavy cast case with Baker Selhurst Senior speaker, Collaro motor and pick-up, mounted in solid oak cabinet, complete with valves; £12 each; output approximately 6-8 watts.—W. Burns and Co., 287, City Rd., E.C.1. [1959

AERODYNE S.G.3 Receiver, absolutely complete, brand new, guaranteed perfect; listed £9/9, £7/7; demonstration by appointment.—Prince, 30, Harbertou Rd., Highgate, N.19. [1950

AMPLION Six A.C. Receiver, perfect order; demonstration by appointment; 9 guineas.—Mitchell, 12, Woodlands, S.W.20. [1947

ACCUMULATORS—BATTERIES.

NEW Block Accumulators, 7/6; everything bought, sold, exchanged.—87, High Rd., Chiswick. [1943

CHARGERS AND ELIMINATORS.

TANTALUM for A.C. Chargers, H.T. and L.T.—Blackwell's Metallurgical Works, Ltd., Garston, Liverpool. [9346

TRICKLE Chargers, ½ amp., with Westinghouse Rectifiers, complete, 11/9; 1¼ amp., 19/11; eliminators, 20 m.a., 34/6; particulars free.—Arden Agency, Wollaston, Wellingborough. [1818

BROWN and SALTER, Vortexion, Wimbledon, for the finest transformers made regardless of price; all models guaranteed 12 months, tested on full load and 2,000 volts between windings before despatch; all finished in cast aluminium frames or shroudings.

VORTEXION Model Specified for the Modern A.C. Quality Amplifier, 400-0-400, 110 milliamps, 4v. 3a. C.T., 4v. 2a., 4v. 1a. C.T., any input, 50c., insulated terminal type; 24/-.

VORTEXION.—W5, 6, or 7 for Westinghouse H.T.5, 6, or 7, with 4v., 1-4a., C.T.; 11/6.

VORTEXION.—W8, 9, or 10 for Westinghouse H.T.8, 9, or 10, with 4v. 1 2a., C.T., 4v. 2-5a., tagged leads, shrouded; 16/6.

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VORTEXION.—350-0-350, 75 m.a., 4v. 1-2, 4v. 2-4a., all C.T., open type tagged leads; 13/6.

VORTEXION.—350-0-350, 120 m.a., 4v. 2-5, 4v. 1-5, 4v. 2-4, all C.T., shrouded type tagged leads; 16/6.

VORTEXION.—400-0-400 or 450 or 500-0-500, 120 m.a., open types, 4v. 2-4a., 4v. 2-5a., 4v. 2-5a., all C.T.; 19/-; tagged leads.

VORTEXION. 500-0-500, 150 m.a., or 450-0-450, 160 m.a., or 400-0-400, 190 m.a., 4v. 2-5a., 4v. 4a., 4v. 2a., 4v. 2a., 4v. 2a., all centre tipped, any input, 50 C., beautifully shrouded, core size, 2¼×3¼, screened primary, and strips, a £5 model. 35/-.

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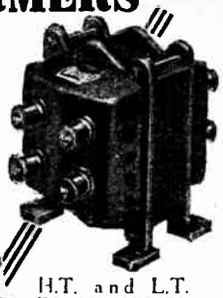
VORTEXION for Helsby Condensers, 750 D.C. working, 6 mfd.; 6/6, list price 21/6.

VORTEXION.—Transformers made to your specification.

VORTEXION.—Brown and Salter, 182, The Broadway, Wimbledon. Tel.: Liberty 2814. [1812

Radio Data Charts. For the keen amateur. By post, 4/10.

HEAYBERD MAINS TRANSFORMERS



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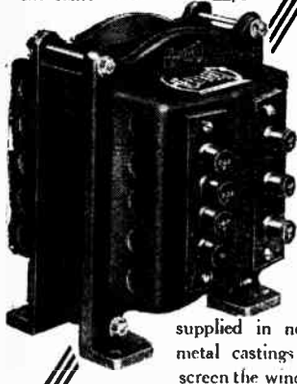

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Above models are supplied in new type Heayberd metal castings which completely screen the windings, and are fitted with insulated terminals. Voltage regulation is very good. Negligible temperature rise. **12 months guarantee.**

Full details of Heayberd Mains Transformers, Mains Units, Kits and components are given in the new Handbook.

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SLAB TYPE, LOW D.C.
0·1 to 0·3H, 3/6; 0·5, 4/6; 1·0, 5/9; 2·0H, 6/9
(Tappings Extra)

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SHORT WAVE, UNSCREENED, **2/3** ALL ITEMS

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SERADEX Milliammeters, 0-10 m.a., 5/11; or type M.E.2, having larger scale, 7/11.

SERADEX Tubular Condensers, non-inductive, 800v. test, 0.005, 0.01, 0.02, 0.03, 0.04, 0.05, and 0.1 mfd., 8d. each; 0.25 mfd., 9d.; 0.5 mfd., 1/-; 1 mfd., 1/5; 2 mfd., 1/9.

SERADEX Glasswound Resistors, type G.125, accurate to 2½%, colour coded, entirely wire wound, 25 to 1,500 ohms, 9d.; 5,000, 1/-; 10,000 ohms, 1/3.

FULL Lists from Your Dealer, or Trevor Pepper, Woke Green Rd., Birmingham. [1925

N.P. for All Battery Chargers from A.C. Mains; stamp for trade lists.

N.P.—Trade prices for Senior Two chargers, 105/- delivered, output 15-17 volts, 1½ to 3 amps; variable resistance, ammeter, etc., will charge up to 36 2v. batteries at once; also H.T. list.

N.P. Valve Charging Units; from 65/- to £27; one to four circuits.

N.P.—Specialists in A.C. mains chargers; also make D.C. boards from 25/-.

N.P. will Start You in Business of Charging and Fit Your Every Need; exchange your instrument when required.

N.P. have one or two Soiled Instruments; stamp for list; bargains.

N.P. Send Trade Lists and Photographs for Stamp.—Nash Products, Ltd., Stechford, Birmingham. [1916

A.C. or D.C. Chargers for 2 to 200 cells at Low Prices; state requirements; dynamos and starters in stock, all sizes, Brown's Generometer battery superseders for H.T. for 2v. or 6v. input, 37/6 and 52/6; television and sewing machine universal motors, 25/-; lists. Electrolix Radios, 218, Upper Thames St., E.C.4. [0393

EKCO A.C.H.T. Eliminators for 220-240v.: 3F.B.20 (Westinghouse) 30, 60, 120 v. 20 m.a., £2; 1V.A.20 (with valve), 0-120, 120 v. 20 m.a., £2; R.20 (with valve), 200 v. 20 m.a., 30/-; Atlas A.C. unit (with valve), output 250 v. 50 m.a., £2/5; Ekco D.C. eliminators, for 200-240 v. 2V60, two 0-120 var., 120 v. power, 60 m.a., £2 5. 1V60, 0-120 var., 120 v. power, 60 m.a., £2; F.V.120, two 0-120 var., 200 v. 120 m.a., £3/5; CLA H.T., 0-120 pow r, L.T 1·6 v., 0.6 amp., G.B. up to −21 v., £3/10; guaranteed perfect condition. Woolyer, 18, Uxendon Crescent, Preston Rd., Wembley. [1929

110-volt A.C. Bullphone, two variables; offers. Sergeant Biedenkamp, R.A.F., Digby, Lincs. [1944

CABINETS.

RADIOGRAM Cabinets; fully illustrated list free; remarkable values.—Gilbert, Cabinet Maker, Swindon. [1635

RADIO Cabinets Made to Your Own Design; estimates free.—Crabtree, Thistle Hill, Kirkheaton, Huddersfield. [1769

WE Can Supply Brand New Complete Gramophones, London made cabinets, at less than the cost of cabinets; ideal for converting to radiograms; 28 models to choose from; 52/6 to £10; illustrated list free.—Radley's, Ltd., Canal Rd., Bradford [1739

W.W. Station Indicator, solid oak polished ceilings, oak plywood panel, drilled and grooved ready, 8/6, carriage paid; complete with specified components, 27/6.—G. Wood, Wylfa House, Mold. [1902

CLEARANCE Lines in Cabinets for Radiograms, mains or battery sets, loud-speakers, gramophones, etc., endless variety, lowest prices (no catalogues).—H. L. SMITH and Co., Ltd., 287-9, Edgware Rd., W., or at associated shops: Charles and Co., 27, Lewisham High Rd.; Burt and Co., 49, Broadway, Deptford; Wright and Co., 367, High St., Stratford; G. E. Smith, 25, Queen's Rd., Watford. [1961

DYNAMOS, ETC.

ROTARY Converter, nearly new, latest type G.E.C., 200-240 D.C. in, 200-240 A.C. out, 100-150 watts, complete with transformer, filter unit, auto cutout, etc., in metal soundproof cabinet; accept £8, cost nearly £30; seen working here.—Johnson Engineering, 86, Great Portland St., W.1. [1891

CONVERTER for Sale, G.E.C., 200 watts 230 D.C., 150 A.C., 2 P.H., complete, new condition; cost 27 guineas, would accept £12/10. Apply Robert, 52, Hans Crescent, S.W.3. Kensington 4686. [1922

WATES Rotary Converter, model B, complete starting and silencing box, 50 v. D.C. to 230 A.C.; cost £12 5s, nearly new, £5.—Coltman, Hellaby, Sarratt, Herts. [1905

GRAMOPHONES, PICK-UPS, ETC.

BTH. Senior Pick-up, 22/6; Truespeed motor, 27/6; A.F.5c, 17/6; O.P.3 (c), 7/6; Parmeko 500v. transformer, 27/6; wanted, O.P.M.6 (c).—Mitchell, 12, Woodlands, S.W.20. [1943

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BTH. R.K. Moving Coil Speakers, guaranteed new, unused, manufacturers' surplus, original price 6 guineas.

HIGHLY Sensitive and Wonderful Tone Reason; will handle up to 10 watts output; available for Co., 100v., 200v., 30; also A.C. models, £2 10.

CARRIAGE Paid, c.o.d., or cash with order; send for list of other unused bargains. Sackamp, 46, Upper London St., London, E.C.4. [1435

BAKER'S 200-220 D.C. Super Power, perfect; 45/-.—John Bunting, Fleetwood, Lancs. [1901

1933, new, tested guaranteed P.M. moving coil speakers £1 (list 39/6); cabinet model, 30/- (list 59/6); Classic model, 25/- (list 50/-); oak or walnut cabinet model, 37/6 (list 75/-); 20 m.a. eliminators, D.C. 20/-, A.C. 30/-; electric irons, 7/6; cash or c.o.d.; carriage paid, cash refunded in full if not approved.—Collins, 9-11, Riversley Rd., Nuneaton, Warwicks. [1955

EPOCH

MOVING COIL SPEAKERS

The Finest in The World in Each of Their Price-classes.

Ask your dealer or call for a demonstration at Exmouth House.

Send for New Booklet W.S.81. It is free.

EPOCH RADIO MANUFACTURING Co. Ltd.
Exmouth House, Exmouth St., London, E.C.1
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Write for Illustrated Catalogue of

RADIO - GRAMOPHONE CABINETS

of exclusive modern design, made by craftsmen, in highly figured Oak Walnut or Mahogany, post free

REMARKABLE VALUES.

Cabinets made to order a speciality.

Makers, under license, of the

HOWE BOX BAFFLE.

Recommended by the B.B.C. Full details on request.

GILBERT
Cabinet Maker - - SWINDON
Estimates Free. Est. 1866

RYALLS RADIO,
33, CHANCERY LANE, LONDON, W.C.2.

Offer range of new meters, A.C. and D.C., moving iron and moving coil, Mansbridge condensers up to 750v. working, Mains transformers and chokes, Moulded 1 watt resistances, Wire wound resistances 1 watt to 5 watt, all at very low prices. See our Classified advertisement under Components for details and prices. All new goods. Fully guaranteed.

For the best reproduction from

"THE MODERN A.C. QUALITY AMPLIFIER"

use a

BAKER SPEAKER.

BEST BY TEST.

EVERY PART FOR EVERY CIRCUIT — LEONARD HEYS BLACKPOOL

WHOLESALE DEPOT

For all standard makes of COMPONENTS, KITS of PARTS etc., as advertised in this JOURNAL and elsewhere. All usual Sundries. Personal Attention to All Orders. *SPEEDY & PAINSTAKING SERVICE.* *Write for Cat. enclosing trade card (Bonafide Traders only).*

LEONARD HEYS: FARADAY HOUSE
HENRY STREET, BLACKPOOL.
ELEVEN YEARS EXPERIENCE IN THE WIRELESS TRADE

PRICE CORRECTION

THE CELESTION advertisement that appeared in "The Wireless World" dated Feb. 10th referred to the price of the CELESTION DUAL SPEAKER as £6.6.0. *This should have read* **£6.0.0**

SHORT WAVE BARGAIN

SHORT WAVE PLUG-IN COILS, Nos. 2 to 9 Turn; AIR DIELECTRIC.

STANDARD SIZE

Four 2-4, Six 4-6, all Post Paid. No. 12 for 80 m. and Base-board Coil Holders 8d.

8D. Each

Usual Price 1/6

SCIENTIFIC SUPPLY STORES (WIRELESS), LTD.

Dept. W., 126 Newington Causeway, Elephant and Castle, Southwark, London. Hop 4177

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30/-!!—B.T.H. R.K. moving coil speakers, 6in. cone, new and unused, guaranteed; these speakers are type as used in cinema sound equipment; weight 30lb., and are vastly superior to cheap speakers now on the market 100 volts, 150 volts, and 200 volts D.C.

27/6!!—6v. D.C. speaker, as above; £2/7/6, speaker as above, for 100-250 A.C.

17/6.—British Radiophone 3-gang condensers, unused; carriage paid, cash with order, or c.o.d.—Ward, 12, Tredegar Rd., Bow, E.3. [1941

PICTURE RECEIVER APPARATUS.

TELEVISION Components.—Constructor's Guide, 1/10; cabinet Televisors, complete, £6/16, as new.—Aneel Television, 230, High St., Camden, N.W. [1892

BAIRD Televisor; cost £18/18, sell £8/10; demonstration.—Hollier, 6, Bridgford St., S.W.18. [1954

VALVES.

NEW Large Purchase of a Set Manufacturer's Stock of Valves, guaranteed as new, all latest types, and any valve differing from the maker's characteristic exchanged free.

210H.L.s, 210H.F.s, 210L.F.s, P.M.1H.F.s, P.M.1L.F.s, H.L.210s, H.210s, D.E.H.210s, L.210s, 3/9; 215P.s, 220P.s, L.P.2s, P.215s, D.E.P.215s, P.M.2s, P.220s, special, matched P.M.2A, for Quiescent push-pull, 12/- pair; D.H.s, 41M.H.L.s, 41M.H.s, M.H.4s, A.C./H.L.s, A.C./2H.L.s, 354V.s, 904V.s, D.C./3H.L., 7/-; 41M.P.s, M.L.4s, A.C./P.s, 7/6; P.T.4, P.T.41, P.E.N.4V., M.P./P.E.N.s, 12/-; latest metallised S.4V.B.s, M.S.4B.s, M.S.G. H.A., A.C./S.G.s, 9/-; Cosmo M.V.S.G., 12/-; 442B.V., 1807s, 7/9; 1821s, 7/-; 620T., 15/-.

2,000 Valves are Always in Stock for Immediate Dispatch, prompt attention, for cash or c.o.d.—Newman, 309, Roman Rd., E.3. [1659

THE Following Valves are Guaranteed as New, and any valve differing from the makers' characteristics will be exchanged; all latest types.

A.C. Pen.s, A.C.S1/V.M.s, M.P.T.4s, D.C.2 Pen.s, D.C.2S.G./V.M.s, 11/-; M.S.4s, M.S.4B.s, A.C.S.G.s, S.4V.A.s, D.S.B.s, A.C.S./2s, D.C.2/S.G.s, 9/6.

M.L.4s, A.C.P.s, 41M.P.s, P.M.24s, 8/-; A.C.H.L.s, A.C.2/H.L.s, 354V.s, 41M.H.L.s, U10s, U.U.60/250s, M.H.4s, 7/6; P.T.2s, V.S.2s, 215S.G.s, P.M.22As, 9/-; D.C.3H.L.s, 8/-.

ALL Types of Brand New American Valves in Stock; 247s, 235s, 224s, 236s, 237s, 12/-; 227s, 226s, 280s, 245s, 232s, 10/6.

U.X.250s, 7 watts output, 16/-; 282M. mercury vapour rectifiers, 11/-; for quickest delivery send telegraph money order.

OVER 2,000 Valves are Always in Stock for Immediate Despatch; carriage paid, cash with order or c.o.d.—Ward, 12, Tredegar Rd., Bow, E.3. [1940

COMPONENTS, ETC., FOR SALE.

WESTON Moving Coil Milliammeters (301), 0.15 upwards 22/6; Turner ditto, 17/6; Turner thermo couple ammeters, 0-1.5, 25/-; 3-range moving coil meters, 0-3 m.a., 6 and 120 volts, 22/6; electrostatic and moving coil voltmeters, 0-2,000, 32/6; moving coil milliammeters, 0-10 upwards, 10/6; alterations and repairs of every description.—The Victa Electrical Co., 47, High St., Battersea, S.W.11. [0355

CONDENSER Blocks 6d. per mfd., 650-volt test, in blocks of 6 mfd. upwards, wired in 2 mfd. units; 2 years' guarantee; send by return of post on 7 days' approval; cash with order.—Butlers Radio, Ltd., 191, Forest Rd., Walthamstow, E.17. 'Phone: 3134. [0396

CHASSIS and Screen Panels, constructed to any design, aluminium sheet supplied; estimates free. Minns, 19, Woodthorpe Rd., King's Heath, Birmingham. [1848

ROTARY Converter, input 6-12 volts D.C., output 25-35 volts 1 amp. A.C., complete as new, 15/-; rotary converter, 6-12 volts input, 400-500 volts 50 milliamps output, both D.C., 15/-.—Below.

TELEPHONE Equipment. Table telephone complete, magneto ringing, 17/6; large ironclad magneto ringing telephone, new and complete, size 24in.×10in.×6in., 50/-; ironclad loud speaking telephone, fittings, microphone, and loud speaker only, 25/-; 5-line automatic telephone relay, 30/-; microphones, 4/6; transformers, 2/6; pedestal telephones, 7/6; automatic dials, with switching, 2/-; buzzers, 2/3; telephone magnetos, 4/6.—Below.

D.C. Motors, 220v. ½h.p., fitted 2 3in. cylinders, with driving gear, believed for air suction work, 50/-; check meters for A.C. mains, 220v. 50 cycles, single phase, 6/6; ½h.p. A.C. repulsion motor, 220v. 100 cycles, single phase, 50/-.

2-VALVE Transmitters, with valves, 15/-; 2-valve receivers, no valves, 10/-; new transformers, 100v. input, 10,000v. output, 25/-; ditto, second-hand, 12.6.—Below.

DYNAMOS for Accumulator Charging or Lighting, also meters, regulators, resistances, switches, cut-outs, etc.—Below.

A.C. Motor, 200 230v. 50 cycles, single phase, ½h.p.h., centrifugal starter, reversible, ball bearing, double ended shaft, 1,500 r.p.m., as new, maker Crypto, price £3/15; ½h.p. A.C. motor, 220v.-50-1, induction, ring oiler bearings, £2.—Below.

GALPIN, 23, Tyrwhitt Rd., Brockley, London, S.E.4. Terms strictly cash with order or c.o.d. (charge extra); 3 days' approval from date of delivery; all goods guaranteed. Nearest station St. John's, Lewisham. List free. [1895

FERRANTI Eliminator, 200v., 100 m.a., £6/10; Primustatic cabinet speaker, with Ferranti tapped choke, 27/-; P.P.5/400 valve, new, 16/-; Ekco 3-valve receiver, £8.—Angel, Tunghall Lane, York. [1893

COSMIC RADIO SERVICE, 23, Water St., Liverpool. —Ferranti A.F.3, 13/6; A.F.4, 8/-; A.F.5, 17/-; A.F.5C, 18/-; O.P.3C, 14/-; R.1, R.7, 11/- each; R.5, 14/-; Varley Resistance and resistance, 12/-; Lotus 30h. 50 m.a. chokes, 8/-; R.I. Pentamu, 12/6; Ready Radio low ratio Instamats, 17/-; Hydra 8 mfd. 500v. test, 7/-; British made combined meters, 0-10v., 0-250v., 0-100 m.a., 10/-; R.I. chokes, 30-20h. 50 m.a., 7/-; Regen-tats, all values, 5/-; postage extra. [1903

FOR EVERY SET—*there's a*

PILOT AUTHOR KIT

CASH—C.O.D.—or H.P.

MODERN A.C. QUALITY AMPLIFIER

KIT "A" Kit of specified parts including ***Plymax Chassis Ready Drilled and Assembled,*** and ***PETO-SCOTT Metal Cowl,*** but less Valves, Cabinet, Gramophone Motor and Pick-up.

CASH or C.O.D. Carriage Paid

£10-14-0

or 12 monthly payments of **19/7**

KIT-BITS *Selected C.O.D. Items. You pay the postman, we pay post charges on orders value over* 10/-

1 Savage Mains Transformer, Type M.G.A.... ...	£2-0-0
1 Savage "Massicore" Output Choke, Type L.34...	15-0
1 Multitone "Toco" L.F. Transformer, 4 : 1, with graded Potentiometer	£1-1-0
1 British Radiophone combined 100,000 ohms Potentiometer and Mains Switch, Type 484...	10-6
1 Ediswan D.L.S. Thermal Delay Switch	7-6
1 Marconiphone Pick-up	£2-2-0
1 B.T.H. Trusperd Gramophone Motor	£2-9-6
Set of specified Valves	£2-18-6

***Exclusively Specified**

***PETO-SCOTT MODERN A.C. QUALITY AMPLIFIER CABINET**

Constructed of Solid Oak, hand French polished and beautifully finished, ready to take this latest "Wireless World" Amplifier. EXCLUSIVELY SPECIFIED BY THE DESIGNERS. CASH or C.O.D. Carriage Paid ... **59/6**

*Peto-Scott Plymax Baseboard 18"×9"×1¼"	9/6
*Peto-Scott Special Heat-deflecting Aluminium Cowl. As specified	7/9

QUIESCENT PUSH-PULL TWO

KIT "A" Author's Kit of specified parts, including ***Ready Drilled Panel and Assembled Baseboard,*** but less Valves, Cabinet, Meter and Speaker.

CASH or C.O.D. Carriage Paid

£3-9-0

or 12 monthly payments of **6/4**

ACCESSORIES.

1 Sifam Moving Iron Milliammeter, E.60 - - -	10-0
1 Celestion Q.P.T. 19A Loudspeaker with Transformer - - - - - - - -	£2-10-0

Specify if Panel is required drilled to take Meter when ordering.

If Sifam Meter is required add 10/- to Cash Prices or 11d. to each monthly payment.

ALL-WAVE MONODIAL

KIT "A" Author's Kit of specified components including ***Ready Drilled polished Oak Ply Panel, and ready drilled and assembled baseboard,*** but less Valves and Cabinet.

CASH or C.O.D. Carriage Paid.

£12-1-0

or deposit £2-1-0 and 11 monthly payments of £1-0-0.

KIT "B" As Kit "A" but with Valves. Cash or C.O.D. Carriage Paid **£16-18-6**

or £2-18-6 deposit and 11 monthly payments of £1-8-0

Q.P.P. PILOT CONVERSION KIT

CONTAINS: 1 Q.P.P. Transformer, 1 Q.P.P. Output Choke, 4 Non-Inductive Resistances, 1 Potentiometer, 2 Mansbridge Condensers, 2 Valve Holders, 1 Tone-Compensating Condenser, 1 H.F. Choke, G.B. Plugs, Wires, Screws, Flex, etc. *With FULL SIZE diagrams and constructional notes.*

Cash or C.O.D. Carriage Paid.

42/6

Meter, if required, 10/- *extra.*

QUIESCENT PUSH-PULL PARTS

FERRANTI Type AF12C Push-Pull Input Transformer	15/-
FERRANTI Type OPM12C Push-Pull Output Transformer	15/-
R.I. Quiescent Push-Pull Input Transformer	16/6
R.I. Quiescent Push-Pull Output Choke...	12/6
SOUND SALES Push-Pull Input Transformer	16/6
SOUND SALES Push-Pull Output Choke	10/6
VARLEY Type DP36 Push-Pull Input Transformer ...	17/6
VARLEY Type DP37 Push-Pull Output Transchoke ...	18/6

*Above Prices include 1/6 Royalty.

Special Stockists for all "Wireless World" FIRST SPECIFIED COMPONENTS.

PETO-SCOTT CO. LTD. 77, CITY RD. LONDON, E.C.1

Components, etc., for Sale.—Contd.

VARLEY Coils on Base B.P.9 and 10, and 2 11's; 19/6.

VARLEY I.F. Transformer, B.P.21; 5/-.

UTILITY 0.0005, 4-gang, fully screened, with disc drive; 17/6.

FERRANTI B.I. Choke; 10/6.

SONOCHORDE P.M. Standard Speaker, with universal transformer; £1; list price, 32/6, unused.

J.B. UNITUNE 2-gang Condensers, fully screened, with disc drive; 10/6, unused.

ALL Above Goods Guaranteed Perfect, sent on 7 days' approval against cash, or c.o.d.; we will allow you 50% of the list price on your surplus parts in exchange for new.

W. B. MACKIE, 61, Dartmouth Rd., Forest Hill, S.E.23. 'Phone: Sydenham 6741. [1903

PEPPER Offers the Following Under Usual Money Back Guarantee; cash, c.o.d., or deposit. Carriage paid over £2.

VALVES.—P.M.12, P.M.1DG., S.G.215, etc., 8/6; P.M.16, S610, P.M.24, P.T.425, etc., 7/6; Tungsram, S407, S210, 6/6; P625, P625a, 5/11; S625, 4/66; A.C.2/H.L., A.C. H.L., 104v., M.H.L.4, A.C.104, A.C.084, 7/11; A.C. P.1, Cossor 4X.P., P.X.4 (old type), 8/6; P.M.3, P.M.4, P.M.5X, P.M.5d, P.M.5b, D.E.5a, D.E.5b, D.E.5, P.M.256, P.M.6, etc., 2/3 each.

ALL Valves Tested Before Despatch, satisfaction assured, full emission guaranteed.

TRANSFORMERS.—A.F.5, A.F.6, 17/6; A.F.5c.c., 18/6; O.P.M.3c, 13/6; O.P.M.1, O.P.4c, R.I. Pentamu, 9/11; Nicket, 4/3; Hypermute, 6/6; Hypermu, 9/11; Telsen, R.I. 7 to 1, 5/9.

MAINS Transformers.—Philips 4V5a, L.T., 5/11; Bryce W.W.A.C.3, 13/6; special offer of transformers for H.T.8 200v. 200 m.a., with L.T., 15/- each.

VARIABLE Condensers.—Ormond single screened, 4/-; ditto, 2-gang, 7/11; Polar Tub ditto, 9/6; Chassismount, 3-gang, complete, 10/6.

COILS.—Wearite O.T.1, O.T.2, Lewcos I.F.T.P., I.F.T., 5/6; O.2, O.S.C.44, 4/11; K.G.O., 5/-; Lewcos D.B.G., 2/11.

FULL Lists of Surplus Now Ready.—Pepper, 48, Wake Green Rd., Moseley, Birmingham, 13. [1926

COMPONENTS for 21L.F. 4-valve A.C. Receiver, with valves, including Colvern Band Pass coils, Cyldon gang condenser, Varley 10-watt resistances, Savage mains equipment; £6.—Powell, 41, Merton Hall Gardens, Wimbledon, S.W.20. [1924

POLAR 3-gang Condenser and set of Magnum Screened Ganged Coils, Band Pass and H.F.; 16/6 the lot, post free.—Radio, 25, St. David St., Falmouth Rd., S.E.1. [1919

51/6.—Manufacturers' surplus: 1933 3-valve battery receiver chassis (listed £7/15), Vick screened grid, detector, pentode, J.B. ganged condensers, screened coils, R.I. and T.C.C. components (with valves, £3/9/6).—Bale, 154, High St., Ilfracombe. [1917

LOOK.—O.P.M.3C, O.P.M.4C, 14/- each; 20 hy., 100 m.a. Varley choke, 10/-; D.C. 15-25, 17/6; A.F.6, A.F.7, 15/-; potentiometers GF. Megites, 50,000, 2/-; Varley power, 5,000, 30,000, 3/9; Sovereign 1 meg., 2/-; 2 Ormond fully screened 3-gang, 10/- each; coils, Goltone G.G.0 (new), 3/-; Telsen S.W., 2/-; Lissen Torex, Telsen Ace, 2/-; B.G. output transformer, 5/-; Telsen 20 hy. tapped choke, 4/-; R.I. Pentamite, 8/6; Pentamu, 9/-; Sifam M.C. meter, 0-500v., 500 O.P.V., 22/6; 0-50 m.a., 10/-; following unused: H.T.8, 14/-; Lupin Radio, 49, Clifton Rd., Liverpool, 6. Post extra. [1915

BIRMINGHAM RADIO MART'S Weekly 'Selection Manufacturers' Surplus Stocks, new unless otherwise stated.

RESISTANCES.—Erie, H.M.V., etc., our selection, 5,000 to 100,000 ohms, 3/- dozen; Dubilier and T.C.C. mica condensers, 3/- dozen; H.M.V. hum stoppers, C.T., 9d.; anode oscillation stoppers, 3d.

METERS.—British flush, 2½in. nickel, any range above 20 m.a., 5/9; few Sifam M.C., 15/-; 2 m.a., 17/6.

CENTRALAB Dual Volume Controls, ex H.M.V., 3/6; Logarithmic, 1,000 to 10,000 ohms wire wound variable resistances, 2/-.

FERRANTI, O.P.2, 8/-; O.P.M.2, 10/-; B3 chokes, 6/-; many others, as new.

GOLTONE Cosmic Coils, comprising one dual range coil and one short wave, on air spaced formers; the pair, 2/6.

2-GANG 0.0005 Die Cast Frame, ¼in. spindle trimmers, worth, 17/6, finest quality, similar Radiophone; 6/6.

NEW Boxed Lewcos Short Wave 6-pin Coils, 20-45, and 40-90 metres, 1/6, or 3/- pair, post free; series gap all-brass condensers, 2/6 each.

REGENTONE Power Packs, containing mains transformers, and Westinghouse rectifier, giving 150v., 25 m.a., and 4v. 4a., 25/-; filter packs for above, 7/6.

NON-RESONANT Insulated Baffles Prevent Cabinet Resonance; 3d. each to callers, ex Amplion.

LARGE Stocks of Valves, high voltage condensers, Rola, etc., M.C., as new, at clearance prices.

RADIO MART'S Oddment Sale Now in Full Swing; hundreds of snips for callers.—19, John Bright St., Birmingham. [1914

MAGNAVOX Magna, D.C. 144, 200 250 volts D.C., Ferranti A.F.5c(S), A.F.9, O.P.M.1(c), O.P.M.6(c), Formo Band Pass unit; what offers?—124, Desborough Av., High Wycombe. [1897

3-GANG J.B. Nu-gang Condensers, complete boxed, as new, fully screened, at 14/6; also splendid 2-gangs, screened, complete with dial, drive, knobs, etc., at 10/6, boxed, as new; trade enquiries invited.—W. Burns and Co., 287, City Rd., E.C.1. [1960

NEW Transformers, A.F.6, 18/6; mains for H.T.8/9, 2 and 6 amps. L.T., both C.T., 17/6.—83, Nora St., Barrowford, Lancs. [1957

BAND Pass Radiopak, unused; 37/6.—Pickering, 75, Lenthall Rd., E.8. Letters only. [1946

MARCONIPHONE K17, B.T.H. Senior, pick-ups, 31/6; Blue Spot 100U's, 18/9; all guaranteed new.—Aldridge, 29, Chatterton Rd., London, N.4. [1951

Handbook of Technical Instruction for Wireless Telegraphists. (Fourth Edition.) By post, 25/9.

Components, etc., for Sale.—Contd.

PREMIER SUPPLY STORES Offer the Following Brand New Goods at a Fraction of the Original Price; all goods guaranteed perfect; carriage paid over 5/-, under 5/- postage 6d extra. (Ireland carriage forward.)

PREMIER.—Mains transformers, all guaranteed, terminal connections, 200-250 input 40-100 cycles, output 135 volts at 80 m.a. for voltage doubling, 8/6; 4 volts 4 amps. C.T. low tension, 2/- extra; Westinghouse rectifier for above, 180v. 30 m.a., 8/6.

MAINS Transformers, primary 200-240 volts, secondary 350-0-350 volts at 90 milliamps., 4 volts at 3 amps. (C.T.), 4 volts at 2 amps (C.T.), 12/6.

AMPLION Transformers, input 100-250 volts, output 350-350 volts, 120 milliamps., 4 volts at 5 amps., 4 volts at 2 amps., 6 volts at 1 amp., all centre tapped; 17/6.

MAINS Transformers, 12 volts 1 amp., 7/6; 9 volts 1 amp., 7/6; 4 volts 4 amps. and 4 volts 2 amps., 8/6; 14 volts 4 amps., 12/6; 4 volts 3 amps., 7/6. 4 volts 5 amps., 8/6; 6 volts 2 amps., 7/6; 10 volts 3 amps., 10/-; 22v. 1a., 10/-.

H.T.9 Transformer, 230 volts 200 milliamps., with 4 volts 4 amps. (C.T.) winding; 15/- (with screened primary).

H.T.8 Transformer, with 4 volts 3.5 amps. low tension C.T., 15/-; with Westinghouse H.T.8 rectifier, 27/6 (with screened primary).

MAINS Transformers, output 250-0-250 volts at 60 milliamps., 4 volts at 1 amp., 4 volts at 2 amps., 4 volts 3.4 amps., all centre tapped; 15/- (with screened primary).

MULTI-RATIO Output Transformers, 15 different ratios, 7/6; Pye Chokes, 20 or 32 henries, 4/-.

PREMIER Chokes 40 milliamps, 25 henrys, 4/-; 65 milliamps, 30 henrys, 6/-; 150 milliamps 30 henrys, 10/6; Pentode output chokes, tapped, 7/6.

SMOOTHING Chokes for Series Connected Filaments from D.C. mains, carry 1 amp.; 7/6.

KOLSTER-BRANDES 80 milliamp. 30 henry Chokes, tapped 1/3 and 2/3, 7/6.

T.C.C. Condenser, 2 mfd. 750 volts working, 4/-; 4 mfd. 750 volts working, 6/-, 4 mfd. 400 volts working, 4/-; 4 mfd. Electrolytic, 440 volts working, 4/-; 8 mfd., 4/6.

T.C.C. Block Condensers, 250 volts working, 8+2, 2+1+1 mfd., 5/6; 375 volts working, 1+1+0.1+0.1+0.1+0.1+0.1 mfd., 2/-; 375 volts working, 6+4+2+2+2 mfd., 10/-; 250 volts working, 2+2+2+2+1 mfd., 5/6.

WESTERN ELECTRIC, 0.01+0.01 mfd., 400 volts working, 1/-; blocks 4+2+2+2+1+0.09 mfd., 400 volts working, 6/-.

FERRANTI Condenser Blocks, 300 volts working, 4+4+2+2 mfd., 10/-; all entirely separate.

VARIABLE Condensers, Polar, 3-gang tuning type, fully screened, split end vanes and disc drive, 0.0005, 12/6.

ORMOND All-brass 2-gang Condensers, semi shielded, 0.0005, 5/-; Ormond all-brass 0.0005 slow-motion condensers, with knob and dial, 3/6; Polar 0.005 and 0.00035, Bakelite Dielectric condensers, with knob, 1/-.

PREMIER Eliminators, input 200-250 A.C., 40-100 cycles, output 250 volts at 60 milliamps., 80 volt and 120-volt taps, incorporating Westinghouse rectifier, 42/6; with 4 volts 4 amps. L.T., 7/6 extra.

PREMIER Eliminators, input 200-250 A.C., output 80, 100, and 120 volts at 20 milliamps., incorporating Westinghouse rectifier, 27/6; with L.T. charger incorporated, 35/-.

D.C. Eliminators, output 60, 90, and 120 volts, at 120 milliamps., 15/-; larger model, output 80, 120, and 200 volts at 50 milliamps, 25/-.

ACCUMULATOR Chargers for A.C. Mains, input 100-250 volts, 1-2 amp, 17/6; 1 amp., 22/6.

PREMIER Eliminators, input 200-250 A.C., output 150 volts at 30 milliamps., 2 lower taps, incorporating Westinghouse rectifier, 37/6, with 4 volt 3-4 amp. L.T.

AMPLION Moving Coil Speakers, type F.M. 644, dual fields, 2,500 and 5,000 ohms (100 or 200 volts), with multi-ratio output transformers; 15/-.

B.T.H., R.K. Minor, moving coil speaker, 2,500 ohm field; 15/-, with multi-ratio transformer.

AMPLION Permanent Magnet Moving Coil Speakers, type M.C.22, complete with multi-ratio transformer, 30/-.

15,000 Ohm Wire Wound Potentiometers, 1/6; Centralab potentiometer volume controls, 50,000 ohms, 2/-; Colvernstats, logarithmically wound, potentiometers, 6,000 ohms, 1/9.

HEAVY Duty Variable Resistances (slider type), wound on porcelain; 350 ohms 1 amp., 2/6; 2,000 ohms ½ amp., 5/-; 500 ohms ½ amp., 5/-; B.T.H. electric gramophone motors, induction type, 100-250 volts, A.C., 30/- complete; double spring gramophone motors, complete 15/-, single spring 9/-; B.T.H. A.C. and D.C. motors, 55/-.

WESTERN ELECTRIC Public Address Speaker Horns, weatherproof, exponential, 7ft. long, bell 22-14, fit practically any unit, constructed of selected timber, weight 100lb.; 25/-, carriage forward.

SPECIAL Offer of Kolster Brandes Gramophone Motors (electric), all complete with turntables, list price £5; No. 1, super A.C. 100-250v., induction type, 55/-; No. 2, super universal 100-250 A.C. and D.C., £2; No. 3, clockwork motor, electrically wound, £2 5.

WIRE-WOUND Resistances, any value up to 10,000 ohms, carry 3 watts, 1/- each, listed 3/-; 6 watts 2/-; 12 watts 4/-.

CONDENSER Blocks, 3 separate 4 mfd. condensers, 400v working, 8/6; with 2 separate 1 mfd. condensers, 2/- extra.

WESTERN ELECTRIC 60 watt and 250 watt Output Valves in Stock at Low Prices.

T.C.C. Condenser Blocks, 3+2+0.5+0.5 mfd., 250 volts, working, 3/6.

WESTERN ELECTRIC Condensers, 250v. working, 1 volt 6d., 2 mfd. 1/-; 400v. working, 1 mfd. 1/-; 2 mfd. 2/-.

T.C.C. Electrolytic Condensers, 2,000+2,000 mfd. 10/-; T.C.C. 1 mfd., 2,000v. working, 5/-.

AMPLION High Inductance Choke Resistance, 2,500 ohms, 80 henrys, 60 milliamps., 5/6.

(This advertisement continued in third column.)

When you incorporate a BURTON TRANSFORMER in your set you are using a component of the highest efficiency, which will reveal itself in the tonal purity and volume of your set.

Ask your dealer for BURTON.

Wound in ratios of 3-1 and 5-1.

PRICE **5 9**

Made by

C. F. & H. BURTON, Walsall.

BUILD A BETTER SET WITH

BURTON COMPONENTS

BLBLBLBLBLBLBLBLBLBLBLBL

GRIP

NEW BOWSPRING WANDERPLUG

Strong spring and wide self-adjustment. Side entry with Belling-Lee patent grip for flex. 12 indications and 6 plain colours.

The "BOWSPRING" gives strong pressure over a far wider range of diameters than any plug we have so far tested.

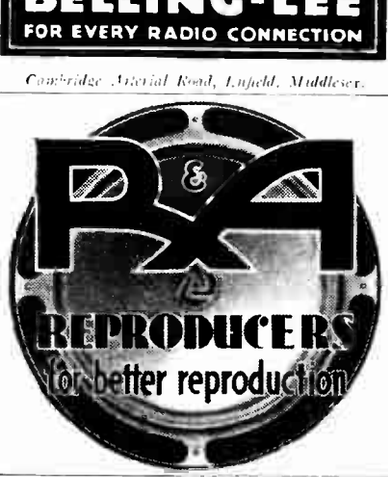
1½D.

Write for list of radio connections.

BELLING-LEE

FOR EVERY RADIO CONNECTION

Cambridge Arterial Road, Enfield, Middlesex.



SERADEX FILTER CHOKES.

Constant inductance. Weight approx. 2½ lbs.

		Price
C.A. 20H at 100Ma, 200 ohms.		12s. 6d.
C.C. 40H at 50Ma, 560 ohms.		each all types.
C.D. 30H at 70Ma, 450 ohms.		Postage 9d.
C.D. 10H at 150Ma, 100 ohms.		

Fitted massive aluminium clamps. Also made in Pentode, Dual and Quiescent types. From your dealer or

TREVOR PEPPER, Wake Green Road, Birmingham.

PARIMA SELENIUM CELLS

FOR ALL PURPOSES.

Parima Light-Sensitive Resistances are constant, mechanically strong, moisture proof and exceedingly sensitive. Fully guaranteed for 12 months. Prices from **5/-**

PARIMA MANUFACTURING CO.,

21, BROMLEY ROAD, S.E.6. *Hither Green 3629.*

Components, etc., for Sale.—Contd.

(This advertisement continued from first column.)

SPECIAL Offer of Mains Transformers, manufacturers type, any input, 250+250v. 60 m.a., 4v. 1a, C.T., 4v. 3a., C.T., 8/6; H.T.8 with 4v. 3-4 amps., 8/6; 180+180v. 40 m.a., 4v. 1a., 4v. 2a, 5/6; 175v. 50 m.a., 4v. 4a, 4v. 1a. 5/6.

PREMIER Transformer for "Wireless World Modern A.C. Quality Amplifier" (see this issue), 20/-; output and L.F. chokes for same, 10/6 each.

EKCO Microphones, complete with transformer, a really fine job, 18/6; wire-wound potentiometer, 50,000, 2/6.

S. G. BROWN'S Power Units, consisting of tapped mains transformer, Westinghouse rectifier, and T.C.C. electrolytic condenser, output 6v. 1 amp., for charging and energising; 21/-, listed £3 15.

WESTINGHOUSE Rectifiers, 120 volts at 20 m.a., 6/6; 180 volts at 30 m.a., 8/6; 8 volts at 0.5 amp., 6/6; 6 volts 1 amp., 9/6.

AMPLION Pick up, with arm and volume control; 18/6.

ALL the Following Lines 6d. Each, or 5/- dozen assorted: Trimming condensers; shielded S.G. or Pentode leads; Dubilier 0.01 condensers; 2ft. lengths of screened wire; 5-pin valve holders; fuse bulb with holder; Graphite sunk 5-amp. switches.

FOR Callers Only.—The following valves, guaranteed as new, half list price: M.P.Pen.; H.L.0.60 25/-; M.V.S.G.; A.C.Pen.; V.D.S.; D.P.T.; A.C./S.G., A.C./H.L.

ALL Orders to 20-22 24, High St., Clapham, S.W.4. Callers to High St., Clapham (Macaulay 2188). Closed 1 o'clock Wednesday. Open till 9 o'clock Saturday. Nearest Station Clapham North Underground. [1883

SOUTHERN RADIO Beg to Announce that Owing to a Considerable Increase in Sales of Mains Transformers and Chokes, they are able to reduce all prices, as production cost is appreciably reduced by increased turnover. All transformers and chokes are guaranteed for 12 months.

MAINS Transformers, fully tapped, primary 200-250v. 50 cycles, centre tapped L.T., 250-0-250, 60 m.a., 4 v/l.v., 1 amp., 4 volts 3 amps., 10/3, carriage paid; 352-0-352, 60 m.a., 4 volts 2 amps., 4 volts 4 amps., 12/3, carriage paid; 350-0-350, 120 m.a., 4 volts 1 amp., 4 volts 2 amps., 4 volts 4 amps. 16/9, carriage paid; 450-0-450, 120 m.a., 4 volts 2-5 amps., 4 volts 4 amps., 4 volts 2 amps., 15/9, carriage paid; 500-0-500, 120 m.a., 4 volts 5 amps., 20/-, carriage paid.

TRANSFORMERS for Westinghouse Rectifiers, H.T.4, 5, 6 or 7, 12/-, carriage paid; H.T.8 or 9, 13/9, carriage paid.

SMOOTHING Chokes, 40 henries, 40 m.a., 700 ohms, 6/-, carriage paid; 20 henries 60 m.a., 480 ohms, 7/-, carriage paid; 15 henries 100 m.a., 330 ohms, 8/-, carriage paid; 20 henries, 120 m.a., 270 ohms, 8/6, carriage paid; special transformers and chokes quoted for and delivery given within 3 days from receipt of order; all guaranteed for 12 months, and carriage paid.—Southern Radio, 323, Euston Rd., London, N.W.1 (near Warren St. Tube). 'Phone: Museum 6324. [1911

SOUTHERN RADIO'S Set Manufacturers' Guaranteed New Surplus.

READY RADIO Meteor 3-valve Screen Grid Battery Kits, new, in sealed cartons, 27/6; less valves; with 3 Mullard valves (P.M.12, P.M.2D.X., P.M.2), £2/10/0 (listed £5 7/6); Ready Radio 703 3-valve battery kits, new, in sealed cartons, 21/-, less valves; with 3 Mullard valves (P.M.2D.X., P.M.2, P.M.1L.F.), 39/- (listed £3/10); Mullard Radio for Million A.C. 3-valve kits, in sealed cartons, including 3 Mullard valves (P.E.N.4V., 354V., S.4V.), £3 12/6 (listed £6 10); Dual Gang variable condensers (H.M.V.), 0.0005, shrouded, and trimmers, 6/-; screened chokes (H.M.V.), 1/- each, 9/- dozen; condensers, all 750 volt, test 4 mfd. 2/6, 2 mfd. 1/9, 1 mfd. 1/1; blocks, 10 mfd. (2+2+2+2+1+1), 1,500 volt test, 6/9 each; all goods guaranteed and post paid.—Southern Radio, 323, Euston Rd., London, N.W. (near Warren St. Tube). Phone: Museum 6324. [1912

MULTITONE "Tuno," with potentiometer, 14/6; Pentrohms, 9/6, c.o.d. 9, Orchard Rd., Barnet. [1949

UNIVERSAL Avometer, new, £9/15; Avodapter, 15/-; Ferranti A.F.5, 18/6; Wearite super frame aerial, 25/-; pair Sonochorde matched speakers, 30/-.—B. Frame, 332, Chertsey Rd., Grimsby. [1942

WEST END RADIO STORES.—Further reductions during our stock clearing sale.

PYE L.F. Chokes, 32 and 20 henries, 3/9; R.I. L.F. chokes, 25 henries, 50 m.a., 4/11.

HEAVY-DUTY Mains Transformers, 200-250v., output 350-0-350v., 60 m.a., 4v. 4a., 4v. 2a., 9/6; Wearite 250-0-250v., 4v. 4a., 4v. 2a., 12/6.

BLUE Spot 100 U. Speakers, 17/9; Magnavox energised m.c. speakers, 2,500 ohms, 18/6.

T.C.C. Aqueous Electrolytic Condensers, 8 mfd., 880v. test, 5/-; ditto, 4 mfd., 4/-; T.C.C. 2,000+2,000 electrolytic condensers, 12v. peak, 4/9.

UTILITY 2-gang Screened 0.0005 S.M. Condensers, 12/6; Polar 2-gang screened 0.0005 S.M. condensers, 9/6.

ERIE 1 watt Resistors, most sizes in stock, 8d. each; Bulgin mains or set toggle switches, 1/-.

DC 2-valve Chassis, det. and pentode, 25/-; 2-valve A.C. chassis, wired complete, 35/-.

DC 2-valve Sets, complete with M.C. speaker pentode, £4/10; A.C. 2-valve set, M.C. speaker, complete, £5; 3-valve A.C., £6/10.

COLLARO Induction Gramophone Motors, complete, listed £3 model, 37/6; Lewcos wire wound 10,000 ohm potentiometer, 1/11.

N. & K. Farrand Inductor Speakers, 70/- model, 35/-; A.C. and D.C. valves, Radiogram, and set cabinets; all above goods as new, and guaranteed; postage extra on all orders; special bargains for callers only.

WEST END RADIO STORES, 14, Lisle St., Leicester Sq., London, W.C.2; and 332, Coldharbour Lane, Brixton, S.W. [1967

ALSO, S.T.; R.I. Hypercore L.F. choke, 5/-; P.P. 3/425, 15/-; P.M.24A., 10/-; A.C./S.G., 12/6; R.I. mains transformer, primary tapped 200-240v. 50~, secondary 180-0-180v., 3v. 3a., 4v. 3a., 13/6, perfect condition; Marconiphone M.C. speaker, type 80, 6-10v. pot., 20/-.—Wembley, 13, Uxenden Crescent, Preston Rd., Wembley. [1930

Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.

Australia with your present set—long distance reception can be enjoyed by everyone who fits an Eelex Short-Wave Convertor, you can receive over 70 extra stations with your present set.

A wonderful instrument that can be fitted in a moment; take one home to-night and you can receive short-wave stations radiating below 160 metres with your present set. No previous experience necessary. You'll get hours of amusement tuning-in short-wave stations from Australia and other distant countries,

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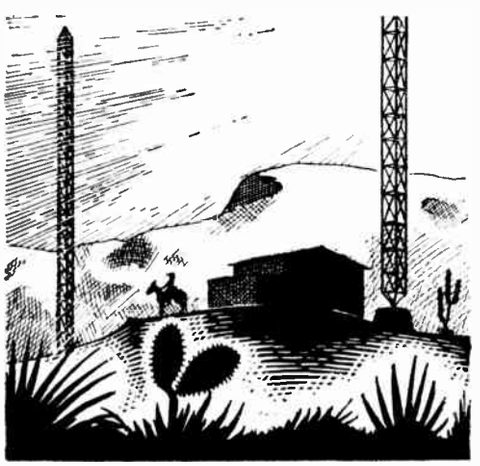
'Phone: Metropolitan 0314 (6 lines).



Components, etc., for Sale.—Contd.

R.

SELECTED Parts for Sale, as new, any c.o.d. or "Wireless World" deposit system, which we recommend if in doubt as to the splendid value offered; we take all risk of damage in transit to customers; all goods tested for callers and guaranteed, however low priced. Notice.—Payment by cheque, no goods despatched until these are cleared.

VARLEY Pentode Output Transformer, 11/6; Varley impedance matching transformer, 11/6; pair Varley P.P. transformers, separate G.B., 30/-; R. and B. L.160 choke, 22/6; Ferranti A.F.5, 18/6, A.F.3, 10/6.

HEAYBERD 4v. 10 amp. Transformer, 13/6; Regentone 4v. 5 amp., 9/-; Philips 4v. 5 amp., 9/-; Wearite H.T.4 choke, 10/6; Lissen super transformer, 7/6; Lissen super 23-1 output transformer, 7/6.

VARLEY Nicore 2, 7/-; Brown Vee cone units, new, 9/-; R.I. mains transformer, 375v., 7.5v., 5.5v., 15/-; R. and B. mains transformer, 300-300, 4v. 2 amp., 4v. 3 amp., 5v., 15/-; Cyldon 4-gang, 15/-; H.T.7, with Varley transformer, 17/6; H.T.3, with Heayberd transformer, 13/-.

ORMOND 65/- Model P.M. Speaker, complete, £2; ditto Magnet only, 18/6; Epoch A1 P.M., with transformer, 17/-; Epoch 20c speaker, 22/-; Lumophone P.M., 18/6; Rola F7, 6,500 ohm field, 27/6; Ferranti 2-1 P.P. transformer, 8/6.

R.I. Straight Line P.P. Transformer, 7/6; Ferranti B8 choke, 5/-; Atlas K26 eliminator, with trickle charger, latest type, 55/-; Ekco A.C.18, £2; Ekco 1V20 metal rectifier, 20 m.a. 150v., 27/6; Atlas valve rectifier, 150v. 15 m.a., 16/-; Regentone 860 eliminator, 200v. 30 m.a., 4v. 5 amp., £2; Six Sixty valve eliminator, 200v. 30 m.a. and G.B., 32/6.

WESTINGHOUSE H.T.11, 25/-; H.T.2 and transformer, 300v 100 m.a., 50/-; B.T.H. D.C. speaker, with transformer, 18/-; Colvern Four, K.B.L.C. K.G.C., 24/-; Lotus 4-gang condensers, new, shielded, and trimmers, 19/6; J.B. Nugang Four, 19/6; Ferranti trickle charger, 18/-.

LOTUS D.C. 3-valve Set, D.S.B., D.H., D.L., complete, £4/10; "Wireless World" Super Five, with 2v. ring valves, perfect, £6/10; G.E.C. A.C. 4-valve set, without speaker, repolished, P.X.4 output, £8/5; Cossor A.C. 3-valve set without speaker, £4/5, all complete; Osram Music Magnet, £5/10.

RYALL'S S.T.400 Coils, 6/6; S.T.300, 6/6; Lewcos and Wearite superhet. coils, 5/6 each; oscillators, 7/6.

VALVES.—M.S.4, 7/6; M.4B, 9/-; A.C. S.G., 9/-; A.C./Pen., 12/-; A.C./P2, 8/6; Marconi P.T.2, 8/6; D.S.B., 10/6; P.M.12, 7/6; A.C. S2, 11/6; A.C.2 H.L., 8/-; P650, 5/-; Mazda P.P.3 425, 8/6. Callers: L.S.5A, 10/-; U5, 8/-.

RYALL'S Own Wire Wound Resistances, wound on vitreous tubes, wire ends, wattage ratings doubled when well ventilated, accuracy plus or minus 2 per cent. in values: 250 1-watt, 300 1-watt, 330 1-watt, 500 1-watt, 510 3-watt, 540 3-watt, 715 1-watt, 750 2-watt, 800 1-watt, 1,200 1-watt, 4,000 2-watt, 5,000 5-watt; prices, 1-watt 1/-, 2-watt 1/3, 3-watt 1/6, 5-watt 1/9; guaranteed one year.

RYALL'S RADIO Offer Reliable Resistances, 1 watt, suitable for all "Wireless World" sets where a 1-watt resistance is specified in values 100, 1,000, 2,000, 5,000, 6,000, 10,000, 25,000, 30,000, 75,000, 150,000, 250,000 20,000, all values stated in ohms, 6d. each, guaranteed one year, wire ends, new goods.

T.C.C. 2,000 m.f. Electrolitic, 12v. working, 9/-; Polar Star 3-gang condensers, new, 16/-, with drive, 18/6; Radiophone 2-gang 0.0005, with cover and disc drive, new, 13/6.

R.I. Adjustable I.F. Chokes, 15 40h. at 200 m.a., 25/-, list 45/-; Marconi 6-1 transformers, ideal type, 5/-; Wavemaster S.M. 0.0005 extenser, 6/6.

T.C.C. 1 mfd., 400v. working, 1/9; Colvern T.G.S.C. coils, 5/-.

SPEAKERS.—D.C.C. Amplion, 2,500 power or pentode, 14/6, new; Kolster-Brandes, new, 4v., L.R., 9/6.

SUITCASE Cabinets in Best Crocodile Leather, 14×14×8, ample room for 12in. turntable and pick-up; 15/-, new.

EDISON BELL 10,000, Eureka wire wound, with holders, 1/-; Edison Bell 0.0005 universal log all metal condensers, 1/6, new.

RYALL'S RADIO, 33, Chancery Lane, London, W.C.2 (nearest Tube Chancery Lane; bus 67 passes door, or Tram to Savoy St.). Holborn 3529. Open Saturday afternoon. Close 7 p.m., Thursdays 1 o'clock.

R. [1927

HOYNE'S Transformers and Chokes.

250-0-250v. 60 m.a., 4v. 1-2a., C.T., 4v. 3-4a., C.T.; 10/-, post 9d.

350-0-350v. 70 m.a., 4v. 2-3a., C.T., 4v. 3-4a, C.T.; 12/6, post 1/-.

350-0-350v. 120 m.a., 4v. 2a., C.T., 4v. 4-6a., C.T., 4v. 2a., C.T.; 16/-, post 1/-.

450-0-450v., 150 m.a., 4v. 2-4a., C.T., 4v. 2-6a., C.T., 4v. 2a., C.T., 4v. 2a., C.T.; 25/-, post 1/3.

500-0-500v. 140 m.a., 4v. 2-4a., C.T., 4v. 2-6a., C.T., 4v 2a., C.T., 4v. 2a., C.T., or 6v. windings if preferred; 27/6, post 1/3.

WESTINGHOUSE Model 150, 200, 240v., 300 m.a., 4v. 2a., C.T., 4v. 2-6a., C.T., suitable for H.T.8, H.T.9, or H.T.10; 15/-, post 1/3.

LINE Transformers (auto wound), 0-100, 110, 200, 220, 240v., 60 watt, 7/9, post 1/-; 120 watt, 11/-, post 1/-; 180 watts 15/-, post 1/3.

CHOKES, 30h. 150 m.a., 12/-, post 1/-; 20h. 120 m.a., 8/6, post 9d.; 30h. 60 m.a., 6/-, post 6d.; 30h. 30 m.a., 3/6, post 6d.

HOYNE'S Transformers are Guaranteed for One Year; every model is made from British material of best quality.

HOYNE'S Transformers.—All primaries are tapped and screened, clamped in aluminium frames, and fitted with clearly marked terminal strips.

HOYNE'S Transformers for Reliability.

HOYNE'S for Best Condensers and Resistances.

HOYNE'S Stock M.C. Speakers.

M. J. HOYNE, Offices and Works, 8a, Gladstone Rd., Wimbledon, S.W.19. 'Phone: Liberty 3303. [1770

HEAYBERD Mains Transformer, 400-0-400, 7.5, £1; Rola F.6, 19/6.—Carpenter, 8, Selsdon Rd., Wanstead. [1908

PPM 29

Recognised the world over as the finest speaker in its class.

77/6 INCLUDING UNIVERSAL TRANSFORMER

The sensitivity of the P.P.M. 29 Speaker is greater than ever before attained. Its quality of reproduction and ability to handle tremendous volume are remarkable achievements. It employs an extra large Hyflex diaphragm and a *massive* magnet. Ask your local dealer to demonstrate. When you hear it you will appreciate the extraordinary life-like tonal quality and sensitivity of this Celestion Speaker.

Price including universal transformer - - 77/6

CELESTION
The Very Soul of Music
FOREMOST NAME IN SOUND REPRODUCTION

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London Showrooms: 106, Victoria St., S.W.1

Components, etc., for Sale.—Contd.

NEWTH'S Offer Brand New Set Manufacturers' Surplus.—Mains transformers, tapped and screened primary, L.T. windings, C.T., 500-0-500 at 120 m.a., 22/-; 450-0-450 at 120 m.a., 21/-; 350-0-350 at 120 m.a., 20/-; above have L.T. windings, 4 volts 2.5 amps., 4 volts 5 amps., 4 volts 2 amps.; "W.W." Straight Five, 400-0-400 at 120 m.a., 4 volts 6 amps., 4 volts 3.5 amps., 4 volts 2 amps., 27/-; "W.W." Quality Amplifier, 400-0-400 at 120 m.a., 4 volts 3 amps., 4 volts 2 amps., 4 volts 1 amp., 24/-; 350-0-350 at 60 m.a., 4 volts 2.5 amps., 4 volts 3 amps., 12/-; 325-0-325 at 80 m.a., 4 volts 2.5 amps., 4 volts 4 amps., 12/-; 250-0-250 at 60 m.a., 4 volts 1 amp., 4 volts 3 amps., 4 volts 1 amp., 12/6; for Westinghouse rectifiers, H.T.8, 200 volts at 200 m.a., 4 volts 3 amps., 12/6; another, with 4 volts 5 amps., 15/-; for H.T.9, 240 volts 200 m.a., 4 volts 4 amps., 15/-; (designed for "W.W." Baby Super); chokes, 20 henry 120 m.a (400 ohms), 9/6; 50 henry 60 m.a. (750 ohms), 8/6; 30 henry 60 m.a. (500 ohms), 6/6; 20 henry 30 m.a. (500 ohms), 5/6; condensers, 750 test, 1 mfd., 1/-; 2 mfd., 1/9; 4 mfd., 2/6; 1,500 test, 1 mfd., 1/3; 2mfd., 2/4; 4mfd., 4/-; multiple 1,500 blocks, 20 mfd., 4+4+2+2+2+2+1+1, 11/-; 11 mfd., 4+2+2+2+1, 6/9; R.I. Parafeed transformers, 6/-, these are not manufacturers' type, but retail shrouded model; Varley E.P.19 transformer, 250-0-250 at 60, 4 volts 1 amp., 9/-; Philips L.T. transformer, 4 volts 5 amps., 10/-; Atlas tapped pentode choke, 8/6; pick up, B.T.H. latest, with volume control, 17/-; variable condensers H.M.V., 2-gang, 0.0005, semi screened, with trimmers, 6/6; J.B., 3-gang, fully screened, 0.0005, with trimmers drive, escutcheon plate, etc., 15/6; resistances and grid leaks, H.M.V. (1) 16,000, (2) 100,000, (2) 0.25 meg., (1) 1 meg., (1) 2 meg., sealed packets, 2/-; Jot; H.F. chokes, screened, 50/60 m.a., 100,000 microhenries, 1/- each, 11/- dozen; moving coil speakers (U.S.A.), manufacturers' type Rolas, 7½ cone, 6 volts (8 ohms), 110-175 volts (2,000 ohms), 90-130 volts (2,500 ohms), 150-200 volts (4,700 ohms), 200-250 volts (5,500 ohms), 17/- each, complete with multi ratio transformer; P.M., 9¾, cobalt steel, 25/- A.C. 200-250, 30/-; dual compensated, any two energised, 36/-; any one energised to 1P.M., 40/-; valves, last few, rectifiers, B.U.442 and U.12, 9/-; M.P.T.4, 10/-; P.E.N.4V., 10/-; carriage paid on all articles over 5/-, c.o.d., or call.—Newth's, Mayfair Radio, 31, George St., Hanover Sq., London, W.1. [1928

MAINS RADIO Offer Guaranteed Set Manufacturers' Surplus, all carriage paid, or call.

DUBILIER, 2mfd. 250 working, 1/6; blocks, 8+2+2+2+1+1mfd. (1,000v. test), 6/6; 12mfd. electrolytic, 450v. working, 2/6.

CLAUDE LYONS, 0.0005, shrouded, 2 gang (with trimmers); 5/6.—Mains Radio Development Company, 4-6, Muswell Hill Rd., N.10. [1931

MILDMAY RADIO EXCHANGE Offers the Following Sound and Perfect:—

DIEHL Aristocrat A.C. Induction Motors, complete, auto stop, listed £4/15, at 35/- each; Paillard A.C. induction motor, 45/-.

WESTON Meters, 0-10 volt, 0-20 amps., 10/-, type 506; 0-8 volt, 16/-; 0-100 m.a., 22/6, type 301; Ferranti, 0-500 m.a., 17/-; 0-100 m.a., 20/-; 15-0-15 amps., 15/-; 0-8 volt, 17/6; Jewel, 0-50 m.a., 20/-; Heayberd, 0-150 m.a., 15/6; Hunts, 0-100 volts, 13/-.

FERRANTI A.F.6, 16/-; A.F.5, 16/-; O.P.M.1, 10/-; O.P.M.2, 10/-; O.P.M.2C., 12/6; A.F.3, 12/-.

SIX-SIXTY A.C. Mains Chassikits, with valves, 65/-; "Wireless World" Baby Super Het, battery model, in special cabinet, with Bakers' P.M. speaker, £7 10s; A.C. mains unit, 35/- extra.

CELESTION P.M. Speakers, type R.P.M.12B., listed at £11/11, 80/- each; Amplion A.B.18, Lion chassis, 35/-; ditto, A.B.14, 25/-; large selection B.A. speakers from 10/-.

MARCONI Latest Type Pick-ups, 27/6; old type, 25/- each; Celestion W.5, 25/-; Junior B.T.H., 14/- each.

EKCO A.C.U. Mains Units, 60/- each; Radiophone 4 Gangs, with drive, 16/- each.

ALWAYS in Stock, largest selection A.C. mains sets and radiograms also valves; write requirements.—24, Mildmay Grove, London, N.1. [1936

ROLA D.C. Speakers, model K, 2,500 ohm field, fitted with transformer for pentode valves, brand new and boxed, 16/-; assorted valves, as new, for callers only, at 3/- each, B.12, L.S.5, 227, 280, 281.

MULLARD P.M.24a, used for experimental purposes, 6/-; utility 2-gang condensers, air spaced type, fitted with external trimmer for front section, brand new and boxed; 10/6.

UTILITY Mite Drum Dials, complete, with 0.0005 condenser, 2/6; mains transformer, 100-240 volts input, output 350-0-350 volts 100 m.a., 4 volts 4 amps., C.T., 4 volts 2-3 amps., 10/6; type No. 2, output 350-0-350 60 m.a., 4 volts 4 amps., C.T., 4 volts 2-3 amps., C.T., 10/-; both types brand new and unused; T.C.C. electrolytic condensers, 440 volts D.C. working, wet type, 8 mfd., 3/-, post 3d.

ETA American Base Mains Screened Grid Valves, type 624, brand new and unused; 6/-.

LOEWE Vacuum Grid Leaks and Condensers and Resistances; 3d. each, 2/- per dozen; 10,000, 15,000, and 25,000 ohms, 2 meg leaks, 0.0003 and 0.0005 condensers.

CALL and See Our Numerous Selection of Bargains in Cabinets, job lines, and sets.—Satisfaction with every purchase at Modern Radio, 25, York Terrace, Clapham, S.W.4. [1966

NEW Address.—Cine and Electrical Surplus Co., now 288, New North Rd., N.1. [1968

CHAL-ELECTRIC Special Offers of Brand New Surplus Goods, carriage paid, cash with order, or c.o.d., moving coil speakers, Rola's (U.S.A.) manufacturers' type power pentode transformer, 7½ cone, 90-130 volts, 2,500 ohms; 200-250 volts res., 6,500 ohms, 16/9 each; A.C. models, 29/6.

CONDENSER Banks, 1,500 D.C. test, 20 mfd., 4+4+2+2+2+2+1+1, 10/9; 11 mfd., blocks, 4+2+2+2+1, 6/4; smoothing chokes, 20 henry, 120 m.a. (400 ohms), 9/3; 50 henry, 60 m.a. (500 ohms), 8/3; 30 henry, 60 m.a. (550 ohms), 7/9; 40 henry, 40 m.a. (650 ohms), 6/6; 20 henry, 30 m.a. (450 ohms), 5/9.

MAINS Transformers, screened primary, 12 months' guarantee, 500-0-500, 21/9; 450-0-450, 20/9; 350-0-350, 19/9; all above range 120 m.a., having L.T. windings C.T.; 4v. 2.5a.; 4v. 5a.; 4v. 2a.; 250-0-250 at 60 m.a., 4v. 1a., 4v. 4a., 12/6.

ASK for Special Quotations to Any Specification.—Chal-Electric, 6, Conduit Street, London, W.1. [1863

EVERYTHING for Movies and Talkies.—'Phone, write or, better still, call and inspect immense stock of bargains.

ILLUSTRA ENTERPRISES, 159, Wardour St., London, W.1. Tel.: 6889 Gerrard. [1621

SPECIFIED FOR THE "MODERN A.C. QUALITY AMPLIFIER"

Mains Transformer, type MGA.

Standard Model ... ... Price 40/-
Manufacturers' type ... ... Price 34/-

Choke Type L34.

Standard Model ... ... Price 15/-
Manufacturers' type ... ... Price 13/-

Prompt deliveries of these and other Savage instruments can be made. Send to-day for complete price and specification list No. WW20.

SAVAGE

GUARANTEED
MAINS EQUIPMENT

W. BRYAN SAVAGE
56/58, CLERKENWELL ROAD, E.C.1.
'Phone: Clerkenwell 3068 9.

BURNE-JONES "STENODE"

These high quality instruments are now available as Radiogramophones and Radio Receivers.

A fully descriptive brochure is now ready and free on application.

BURNE-JONES & CO. LTD.,
"Magnum House," 296, BOROUGH HIGH ST., LONDON, S.E.1. *Telephone:—Hop 6257 & 6258.*
Scottish Agent:—
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Components, etc., for Sale.—Contd.

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A. MATHISEN, B.Sc. (Elect. Eng.), specialist, patents for radio inventions. First Avenue House, High Holborn, London. [1632

PATENTS.

THE Proprietor of Patent No. 383099, relating to concave permanent magnets for loud-speakers, is prepared to receive offers from manufacturers and others for exploitation of same on a royalty or part-licence basis. - Box 6162, c/o *The Wireless World*. [1962

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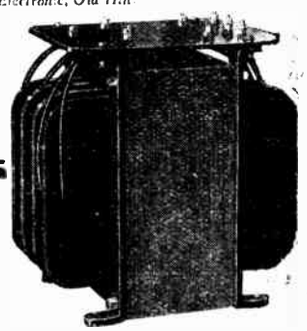

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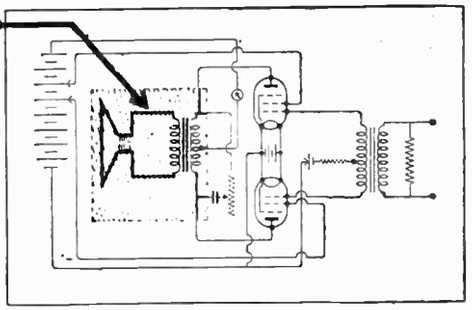

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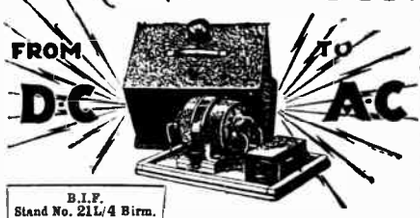

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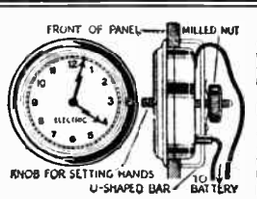

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NATIONAL	Recital of new gramophone records. Symphony concert, from Bournemouth. St. David's day: A Welsh programme from West Regional, including Cyanodorion speeches.
LONDON REGIONAL	Ballad concert. Organ recital. Instrumental concert. Orchestral concert.
MIDLAND REGIONAL	"Bellfounding": A talk by Mr. Denison Taylor, with a recital on the Loughborough War Memorial Carillon. Military Band programme. A Speech at the Annual Dinner of the British Electrical Development Association, from Queen's Hotel, Birmingham.
NORTH REGIONAL	A relay from the Theatre Royal, Rochdale. Rev. Leslie Weatherhead: "Individual Happiness in an Industrial World." Violin recital. Orchestral concert.
WEST REGIONAL	Orchestral concert from National Museum of Wales. St. David's Day programme. Speeches from the Annual Banquet of the London Welsh Celebration.
SCOTTISH REGIONAL	Excerpts from the fifty-third Princess's Pantomime.
BELFAST	Orchestral concert from Stranmillis.

ABROAD

EIFFEL TOWER	8.20 p.m. Symphony concert, conducted by E. Flament.
HILVERSUM	7.55 p.m. Concert from Amsterdam.
PRAGUE	7.5 p.m. The Czech Philharmonic Orchestra.
RADIO PARIS	9 p.m. Lamoureux Concert from the Salle Gavean.
STRASBOURG	8 p.m. Operetta: "Le Voyage en Chine" (F. Bazin).
WARSAW	7.15 p.m. Concert from the Conservatoire.

ATHLONE

413 metres, 60 kW.; and **CORK, 224.4 metres.**—**1.30 to 2.0 p.m.,** Time, Weather, Stock Report and Light Music on Gramophone Records. **6.0,** Popular Music on Gramophone Records. **6.15,** Programme for Children. **7.0,** Variety Music on Gramophone Records. **7.20,** News. **7.30,** Time. **7.31,** Gaelic Lesson. **7.45,** German Lesson. **8.0,** Concert by the No. 1 Army Band, conducted by Col. Fritz Brase. **9.0,** Baritone Solos by John Lynskey. **9.10,** Sketch by Mary O'Hea and Company. **9.40,** Baritone Solos by John Lynskey. **9.50,** Instrumental Solo. **10.5,** Soprano Solos by Miss Cameron. **10.15,** Instrumental Trio. **10.30,** Time, News, Weather and Close Down.

BARCELONA

RADIO-BARCELONA, Call EAJ1, 348.8 metres; 8 kW.—**6.0 p.m.,** Trio Concert. **7.0,** Request Gramophone Records. **7.30,** Exchange Quotations, Talk on Hygiene, and Probable Relay from the Ayuntamiento. **8.0,** Light Music on Gramophone Records and News. **9.0,** Chimes from the Cathedral, Weather Forecast, Exchange Quotations, and Market Prices. **9.5,** Concert by the Station Orchestra. **10.0,** Reading of Poems. **10.15,** Sextet Concert relayed from the Granja Royal. **11.0,** News and Sextet Concert (contd.). **12.0 Midnight** (approx.), Close Down.

BARI

269.8 metres; 20 kW.—**7.0 p.m.,** Agricultural Notes, Tourist Talk, and Dopolavoro Notes. **7.20,** Giornale Radio and Weather. **7.30,** Time Signal and Announcements. **7.35,** Concert of Chamber Music, with Violin, Soprano, and Pianoforte Solos. In the interval, Reading. **9.30,** Light Music on Gramophone Records. **9.55,** News Bulletin.

BASLE.—See **Schweizerischer Landessender.**

BELGRADE

430.4 metres; 2.8 kW. **6.0 p.m.,** Talk. **6.30,** Popular Music on Gramophone Records. **7.0,** Quartet in D Minor for two Violins, Viola, and 'Cello (Schubert). **7.40,** A Radio Play. **8.10,** Song Recital by Frau Lisa Popova, followed by Music by the Station Orchestra: Arias from La Bohème (Puccini); A Masked Ball (Verdi); Madame Butterfly (Puccini); Mignon (Thomas); and Zulumcar (Krstic); Overture, Der Freischütz (Weber); Night on the Bare Mountain (Mussorgsky); Bacchanale from Samson and Delilah (Saint-Saëns). **9.10,** News, followed by Cigány Music from the Rudnicanin Restaurant.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW. **12.45 p.m.,** News Bulletin. **1.0,** Gramophone Concert of Classical Music from **Berlin (Witzleben).** **1.45,** A Grimm's Fairy Tale for Young People. **2.30,** Weather and Exchange. **2.45,** Reading from Das Abenteuer (Karl Benno von Mechow). **3.0,** Talk: The German Student Movement. **3.30,** See **Hamburg.** **4.10,** Talk: Modern Systems of Defence. **4.30,** Talk: Reduction and Remission on Income Tax. **5.0,** Violin Recital: Andalusian Romance and Jota Navarra (Sarasate); Scherzo Tarantella (Wieniawsky); Slav Dance (Dvorák); Danza delle Streghe (Paganini). **5.25,** Topical Talk. **5.40,** Technical Talk on Wireless. **5.55,** Weather and Announcements. **6.0,** French Lesson. **6.30,** Poetry Reading. **6.35,** Pictures from an Exhibition (Mussorgsky), played by Claudio Arrau. **7.15,** Schlagetet—Drama (Hans Johst). **8.45,** Concert from **Heilsberg.** **9.15,** Weather, News, and Sports Notes. **9.45,** Weather Report for Shipping. **10.0,** Serenade from **Frankfurt.** **11.0** (approx.), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—**6.0 p.m.,** Talk: Eltz von Rübenach, Minister of State. **6.10,** Folk Songs. **6.40,** Talk: The Nation and the Church. **7.10,** Talk: Herr von Papen. **7.25,** The Watchword? **7.30,** Ash Wednesday—Readings by Fried Kieling. **8.0,** Ninth Symphony in D Minor (Anton Bruckner), by the Berlin Wireless Orchestra, conducted by Eugen Jochum. **9.5,** Weather, News, and Sports Notes. **9.35,** Wind Instrument Concert, relayed from **London.** **10.45** (approx.), Close Down.

BERNE.—See **Schweizerischer Landessender.**

BEROMUNSTER.—See **Schweizerischer Landessender.**

BODEN.—See **Stockholm.**

BODO.—See **Oslo.**

BORDEAUX-LAFAYETTE

364 metres; 13 kW.—**7.55 p.m.,** Lottery Results. **8.0,** Agricultural Talk. **8.15,** News Bulletin and Weather Forecast. **8.30,** Light Music on Gramophone Records. **9.0,** Carnival Concert by the Station Symphony Orchestra. In the intervals: Popular Music on Gramophone Records.

BRATISLAVA

279 metres; 14 kW.—**5.0 p.m.,** Hungarian Programme. Reading followed by a Smetana Concert; Czech Dances; Aria and Duet from The Bartered Bride. **6.0,** See **Prague.** **9.15** (approx.), Close Down.

BREMEN.—See **Hamburg.**

BRESLAU

325 metres; 60 kW.; and **GLEIWITZ, 253 metres.**—**12.10 p.m.,** Gramophone Concert. **12.45 p.m.,** Time, Weather, News, and Exchange. **1.5,** Gramophone Concert. **1.45,** Sponsored Programme with Gramophone Records. **2.10,** Agricultural Prices. **3.0,** Talk: Breslau History in her Street Names. **3.30,** Chopin Pianoforte Recital by Johannes Sauerland: Etude in A Flat, Op. 25, No. 1; Nocturne in F Sharp, Op. 15, No. 2; Mazurka in F, Op. 7, No. 1; Prelude in B Flat, Op. 28, No. 21; Waltz in A Flat, Op. 42. **4.0,** Reading of Animal Stories. **4.15,** Talk: The Theft of Timber from Forests. **4.35,** Market Prices. **4.40,** Gesang des ausserlichen Lebens Cantata for Pianoforte and Strings (Franz Kauf), by the Choir and Orchestra of the Gleiwitz Teachers' Choral Society, conducted by the Composer, with Introductory Talk by the Author of the Text. **5.25,** Talk: Winter Sports in the Upper Silesian Mountains. **5.40,** Talk: The Prevention of Gas-Poisoning in Mines. **6.5,** Violin Recital by Willi Wunderlich: Concerto in F Sharp Minor (Ernst); Caprice and Romance (Kauf). **6.35,** Weather Forecast. **6.40,** Talk: Economic Depression and Vocational Training. **7.0,** Speech by Reichskanzler Adolf Hitler, relayed from the Exhibition Grounds. **8.15,** News. **8.25,** Germany's Mystic Cathedrals—an Educational Radio Play (Alfons Maria Härtel). **9.25,** Time, Weather, News, Sports Notes and Programme Announcements. **9.45,** Review of German Theatrical Events. **10.0,** The Passion of Christ—Recital by a Franciscan Choir: Passion Song (Greiter); Jesu Abschied von Maria; Schöpfer aller Ding, König Christ; Quoniam die ac norte (di Lasso); O vos omnes (da Vittoria); Geistlicher Maien. **10.30** (approx.), Close Down.

BRNO

342 metres; 35 kW.—**5.25 p.m.,** German Transmission: News and Talks: (a) Films, (b) For Workers, (c) Modern School Administration. **6.0,** See **Prague.** **9.15** (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—**12 Noon,** Gramophone Concert. Selection from A Waltz Dream (O. Straus); Havanaise (Saint-Saëns); Cockney Suite (Ketelbey). **1.0 p.m.,** Journal Parlé. **1.10,** Concert relayed from the Grand Hotel, Antwerp: Conductor, André Tellemann. **5.0,** Concert by the Radio Orchestra, conducted by Charles Walpot: March bohémienne (Filipucci); Scene and Waltz from Gretna Green (Guirand); Overture, Phèdre (Massenet); Suite variée (Pierné); Symphonie Poem, Le rouet d'Omphale (Saint-Saëns); Extase (Gamne); Selection from Philémon et Baucis (Gounod). **6.0,** Talk on Folk Lore. **6.15,** Gramophone Concert: Quartet in F (Haydn); Extracts from Nuit persane (Saint-Saëns); Fadoges (Debussy); Russian Airs (Wieniawski); Rapsodie Limousine (Billant); Valse romantique (Debussy); Overture, La farce du cuvier (Dupont); Scottish Pastorale, Op. 130, No. 2 (Saenger); Holy Week Procession from Sevilla (Turina). **7.15,** Protestant Address. **7.30,** Medical Talk. **8.0,** Concert by the Radio Orchestra, conducted by Charles Walpot: French Military March (Saint-Saëns); Waltz, Très jolie (Waldteufel); Overture, Maritana (Wallace); Songs (Frings); Ballet Music from the Nut-Cracker Suite (Tchaikovsky). **8.45,** Le menage volant—Sketch (Marcel Lefèvre). **9.0,** Orchestral Concert (contd.): Selection from Cavalleria Rusticana (Mascagni); Allegro from the Fourth Violin Concerto (Vieuxtemps); Oriental Suite (Popy); Polka for Two Trumpets, Merle et pinson (Reynaud); Selection from Dédé (Christiné); Waltz, City of Love (Heymann); Foxtrot with Vocal Chorus, Couché dans le foin (Mireille). **10.0,** Journal Parlé. **10.10,** Hot Jazz. **10.30,** Gramophone Concert of Dance Music. **11.0** (approx.), Close Down.

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW. Programme in Flemish.—**12 Noon,** Concert conducted by André Felleman, relayed from the Grand Hotel, Antwerp. **1.0 p.m.,** Le Journal Parlé. **1.10,** Light Music on Gramophone Records. **5.0.** Dance Music from the St. Sauveur Palais de Danse. **6.15,** Gaston Mattens reads from his own Works. **6.30,** Gramophone Concert: Entr'acte from Lakmé (Delibes); Alsatian Echos (Rueqnoy); Rondo (Boccherini-Bazelaire); Qual voluttà trascorrere (Verdi); Selection from Aida (Verdi); Polonaise (Bach); Waltz in B (Mozart); Waltz in F (Mozart); Le Cygne (Saint-Saëns); Schön Rosmarin (Kreisler); Selection from The Tales of Hoffmann (Offenbach). **7.15,** Religious Address. **7.30,** Review of International Affairs. **8.0,** Concert by the Station Symphony Orchestra, conducted by Desiré Defauw and a Mixed Vocal Quartet: Soloist, Rodolphe Soiron ('Cello): Commemorative Overture (Van Hoof); Poème pantagruélique (d'Hoedt); Rhapsodic Fantasia for 'Cello and Orchestra (Jongen); Symphonic Legend, Admia et Hévah (Daneau); Waltzes for Vocal Quartet and Pianoforte Duet (Brahms); Symphonie classique (Prokofiev); Poème élégiaque for 'Cello and Orchestra (Schmitt); Triana (Albéniz). **9.45,** The Ideal Night—Sketch (Seghers). **10.0,** Le Journal Parlé. **10.10,** Concert by Max Alexys and his Orchestra. **11.0** (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—**4.0 p.m.,** Concert by the Station Orchestra: Liberty March (Bohlmann); Overture, Le Maçon (Auber); Selection from Lohengrin (Wagner); Glowworm Idyll (Lincke). **5.0,** News and Time Signal. **5.10,** Talk. **5.25,** Concert (contd.), Selection from Der Arlov (Granichstaedten); Romance (Schmalstich); Intermezzo, Bib and Bob (Démaret); The Bat (Kochmann). **6.0,** Talk on Romania: Her Minerals. **6.40,** Popular Music on Gramophone Records. **7.0,** Time Signal. **7.1,** 'Cello Recital by George Cocea. **7.30,** Talk. **7.45,** Pianoforte Recital by Mme. Ghita Schapira-Mendl: Sonata No. 9 in A (Mozart); Polonaise Fantasia, Op. 61 (Chopin). **8.15,** Violin Recital by M. Filip: Sonata No. 2 (Ysaye); Chanson Louis XIII et Pavane (Couperin-Kreisler); Andantino (Martini-Kreisler); La Précieuse (Couperin-Kreisler); Prelude and Allegro (Pugnani-Kreisler). **8.45,** News.

BUDAPEST

553 metres; 18.5 kW.—**7.0** till Close Down programme also relayed on **840 metres.**—**4.0 p.m.,** Talk. **4.30,** Song Recital by Clara Dullen. **5.0,** Dialogue. **5.30,** Popular Music on Gramophone Records. **6.30,** Talk. **7.0,** Violin and Pianoforte Recital by Laszlo Szentgyörgyi and Anfor Földes: Sonata in E Minor, No. 17, for Pianoforte and Violin (Mozart); Sonata in C Sharp Minor, Op. 21, for Pianoforte and Violin (Dohnányi). **7.45,** Announcements. **8.0,** Concert by the Arpad Toll Cigány Band. **9.10,** Review of Foreign Politics. **9.25,** Concert of Viennese Music by the Royal Opera House Orchestra.

CASSEL. See **Frankfurt.**

COPENHAGEN

261 metres; 0.75 kW.; and **KALUNDBORG, 1,153 metres;** 7.5 kW.—**11.45 a.m.,** Concert by the A. Bendix String Ensemble, relayed from the Wivex Restaurant. **1.0 to 2.0 p.m.,** Interval. **2.0,** Gramophone Concert: Adele Kern: Aria from Don Giovanni (Mozart); Friedrich Schorr and Rudolf Laubenthal: Duet of Hans Sachs and Walter from The Mastersingers (Wagner). Chaliapin: Death and the Maiden (Schubert). Henri Marteau: Adagio pathétique (Godard-Marteau). Sydney Rayner: Obstination (Fontenailles). Gracie Fields: Looking on the Bright Side (Fynn). Harold Ramsay: The Voice in the Old Village Choir (Wood). The Three Ginx: My Baby just cares for me (Donaldson). **2.30,** Concert of Danish Music by the Radio Orchestra, conducted by Launy Grøndahl. March from Moderen (Nielsen); Extracts from The Kiss (Enna); Two Danish Folk Melodies for Strings (arr. E. Reesen); Dina Polka (Lumbye); Prelude to Renaissance (Lange-Müller); Concert Polka for Two Violins (Lumbye); Andante for Strings (Glass); Bagpipes (L. Nielsen); Angusta Waltz (Möller); Evensong for Strings and Harp (Hansen); Festival Polonaise (Nielsen). In the interval, Talk for Women. **4.40,** Exchange and Fish Market Prices. **4.50,** Talk. **5.20,** French Lesson for Beginners. **5.50,** Weather Forecast. **6.0,** News. **6.15,** Time Signal. **6.30,** Agricultural Talk. **7.0,** Chimes from the Town Hall. **7.0,** Forhus og Baghus—Play in Four Acts (Schröder), after Hermann Südermann. **9.0,** News. **9.15,** Concert of French Music, conducted by Emil Reesen. Overture, Anacreon (Cherubini); Allegretto Vivace and Allegro Vivacissimo from the Roma Suite (Bizet); Prelude and Chorus from Carmen (Bizet); Suite, Masques et Bergamasques (Fauré); French Military March from the Algerian Suite (Saint-Saëns). **10.0,** Dance Music relayed from the Nimb Restaurant. In the interval at **11.0,** Time and Chimes from the Town Hall. **11.30** (approx.), Close Down.

CORK.—See **Athlone.**

DANZIG.—See **Heilsberg.**

DRESDEN.—See **Leipzig.**

FECAMP

225.9 metres; 10 kW.—**12 Noon,** Light Music on Gramophone Records. **12.30 p.m.,** News Bulletin. **12.45,** Variety Concert. **6.0 to 7.0,** Programme in English by the I.B.C.: C. Danvers Walker, R. Chene, B. McNabb and W. Crofton Announcing. **6.0,** Concert for Portsmouth and Southsea Listeners. Songs: (a) Onaway awake Beloved (Cowen), (b) Ho Jolly Jenkin (Sullivan), (c) Sinners and Saints (Geehl); Orchestra: Barcarolle from The Tales of Hoffmann (Offenbach); Songs: (a) Tick Tock, from The Toymaker of Nuremberg (Glass), (b) The Toymakers' Song, from The Toymaker of Nuremberg (Glass), (c) A Jovial Monk am I (Audran); Orchestra: The Wayside Shrine (Sherwood). **6.30,** Concert for Isle of Wight Listeners: Old Timers (arr. Hall); Me and the Man in the Moon (Monaco); Amorettentanze (Gung'l); Russian Rhapsody (Nussbaum); Waltz from Der Rosenkavalier (R. Strauss); Musical Comedy Switch (arr. Hall). **7.0,** Local News and Light Music on Gramophone Records. **7.30,** Radio Gazette. **8.0,** The Listeners' Half Hour and News. **8.30,** Popular Concert. **9.0,** Concert, relayed from Le Tréport. **10.0** till Close Down, Programme in English by the I.B.C. **10.0,** Dance Music: Got a Date with an Angel; I'm happy when I'm hiking; Down Sunnyside Lane; Guilty; Hang out the Stars in Indiana; The Haunted House; Live, laugh and love; Belle of Barcelona; The Pied Piper of Hamelin; I'd rather be a Beggar with you; Say a little Prayer for me;

SUN. MON. & TUES. PROGRAMMES

June time is Love time; A Selection of Miracle Melodies; Just Imagine; When it's sunset on the Nile; My Angel Mother. **11.0**, Light Orchestral Music and Pianoforte Solos: The Cuckoo Waltz (Jonasson); Dubinuschka Potpourri (arr. Alexander); Pianoforte Solo: Whoopee Medley (Kahn); That Tiny Teashop (Raymond); The Toymakers' Dream (Golden); Pianoforte Solos: (a) Monte Carlo Medley (Polun), (b) Magic Notes (Steininger); Argentina Amor (Blum). **11.30**, Songs: Alone in the Train (Goulding); Eleanore (Hanley); Molly (Dougherty); Accordion Solo: Annette (Phillips); I don't wanna go home (Gilbert); Never swat a Fly (de Sylva); I've got a feeling (Nicholls); Accordion Solo: Marche joyeuse (Cuvelier). **12 Midnight**, Variety Music: Corazon; My Baby just cares for me; Just a Crazy Song; Laughing Gas; Liza Lee; Keep a Song in your Soul; Todavia. **12.30 a.m. (Thursday)**, Songs: Take away the Moon; Wind in the Willows; You used to belong to me; On with the Show; Pretty Kitty Kelly; With a Song in my Heart; To-day, To-morrow, For ever. **1.0**, Accordion Solos: Flor d'espagne (Vola); La Tourterelle (Damaré); Rosa (Vola); Restless Fingers (Cuvelier); Perdita (Cuvelier); Au revoir (Cuvelier); Tango de Pagnes (Cuvelier); Sobre las olas (Rosas). **1.30**, Songs: Happy Days; Little Green Heaven; Innis Farrell; Happy Days and Lonely Nights; The Nautical March; A Mother's Kiss; By the Waters of Killarney; Considerin'. **2.0**, Dance Music: Mad about the Boy; If you were only Mine; The Younger Generation; Bahama Mama; Moon; You're my Everything; Let's put out the Lights and go to sleep; Moonlight, the Danube and you; Sweet sixteen and never been kissed; Gettin' Sentimental; We just couldn't say goodbye; Sailing on the Robert E. Lee; Listen to the German Band; Too many Tears; A Great Big Bunch of you; We all wanna know why. **2.57**, I.B.C. Good-night Melody. **3.0** (approx.), Close Down.

FLENSBURG.—See **Hamburg.**

FLORENCE.—See **Turin.**

FRANKFURT

259 metres, 17 kW.; and **CASSEL**, **245.9 metres**; and **TRIER**, **259.3 metres.**—**5.25 p.m.**—Talk: The Churches' Efforts towards Union. **5.50**, Topical Talk. **6.15**, Time, Programme Announcements, Weather and News. **6.20**, Through Death to Life—an Ash Wednesday Meditation. Readings, Recitations and Organ Music. **7.0**, Orchestral Concert. **8.0 to 9.10**, See **Stuttgart.** **9.10**, Time, News, Weather and Sports Notes. **9.35**, Concert by the Station Orchestra, conducted by Reinhold Merten. Soloist: Fritz Griem (Pianoforte). Three Marches (Mozart); Pianoforte Concerto in B Flat (Beethoven); Overture No. 1 in D (Seinbert); Orchestral Suite (Mendelssohn—arr. Andreae); Cornelius March, Op. 108 (Mendelssohn). **11.0** (approx.), Close Down.

FREDRIKSSTAD.—See **Oslo.**

FREIBURG.—See **Stuttgart.**

GENEVA.—See **Radio-Suisse Romande.**

GENOA.—See **Turin.**

GLEIWITZ.—See **Breslau.**

GOTEBORG.—See **Stockholm.**

GRAZ.—See **Vienna.**

HAMAR.—See **Oslo.**

HAMBURG

Call ha (in Morse), **372 metres**; 1.5 kW. Relayed by **Bremen, 269.8 metres**; **Flensburg, 227.4 metres**; **Hanover, 566 metres**; and **Kiel, 232.2 metres.**—**3.30 p.m.** (from **Flensburg**), Concert by the Municipal Orchestra, conducted by Kurt Barth. Overture, Le Roi d'Yvetot (Adam); Scandinavian Suite, Op. 77 (Frederikson); The Swan of Tuonela (Sibelius); Selection from Il Trovatore (Verdi); Hungarian Dances (Brahms). **4.30** (from **Kiel**), Talk: The Months of the Year in Folk Custom and Legend. **4.55**, Variety Programme. **5.50**, Exchange and Market Prices. **6.0**, Dialogue between an Engineer and an Official of the Altona Chamber of Commerce. **6.25**, Weather. **6.30**, Recital of Weber's Songs to the Guitar. Hermann Munk (Songs) and Otto Ebel von Sosen (Pianoforte). Variations Op. 2. Songs: (a) Uber die Berge mit Ungestum, from Die Minnesänger, (b) Sanftes Licht; Waltz dedicated to the Empress Marie Louise; Songs: (a) Lass mich schlummern, Herzlein schweige, (b) Liebeszauber; Allemande, Op. 4; Two Songs: (a) Liebeslied, (b) Abschied. **7.0**, Ash Wednesday—a Fantastic Radio Sequence (Kurt Siemers). **8.0**, News. **8.10**, Die Jobriade—Radio Play (Euringer). **9.10**, Time, Weather, News, Sports Notes, and Police Report. **9.20**, Topical Talk. **9.30**, Concert by the Station Chamber Orchestra, conducted by Gerhard Maass. Overture, Der Schauspieldirektor (Mozart); Scottish Dances (Beethoven); Hungarian March (Schubert); Intermezzo in F, No. 1 (Gal); Oriental Sketches (Mraczek); Prelude to Schirin und Gertraude (Graener); Three Pianoforte Pieces (Grieg): (a) Aus jungen Tagen, (b) Lied des Bauern, (c) Sommerabend; Polonaise (Dvorak); Serenade (Berger); Polka from The Bartered Bride (Smetana); Waltz from the Second Serenade (Volkmann); Three Dances (Schulhoff); Duet and Polka from Rappelkopf (Bleeh); Waltz from As You Like It (Zilcher); Bombardon-Marsch (Brüll). In an interval at **10.20**, Ice Report.

HANOVER.—See **Hamburg.**

HEILSBERG

276.5 metres; 60 kW; and **DANZIG**, **453.2 metres.**—**12.5 p.m.**, Concert by the Königsberg Opera House Orchestra, conducted by Ludwig Leschetizky. In the interval at **12.20 p.m.**, News. **1.30**, Sponsored Programme with Gramophone Records. **2.0**, Agricultural Prices and Exchange Rates. **2.20**, Practical Hints. **2.30**, Programme for Children. **3.0**, Educational Talk. **3.30**, Concert by the Small Station Orchestra, conducted by Eugen Wilcken: Overture, Il Guarany (Comez); The Rosary (Nevin); Narcissus (Nevin); Waltz, Nordseestürme (Döring); Suite Goliardica (Amadei); Selection from Madame Butterfly (Puccini); Canzonetta (Boccherini); Overture, Masaniello (Auber). **4.45**, Psychological Talk: The Bringing-Up of Children. **5.15**, Agricultural Prices. **5.20**, Ice Report. **5.25**, Concert by a Boy's Choir. **6.5**, Bridge Lesson. **6.30**, Dance Music by the Small Station Orchestra, conducted by Eugen Wilcken and the Ednur Rumde Band. In the interval at **7.0** (approx.), Weather and News. **8.15**, Military Band Concert: Old and Modern German Marches. Richard Wagner Fanfare Overture, Fra Diavolo (Auber); Türkische Scharwache (Michaelis); Turkish March, Haireddin Barbarousse (Lange-Bey); Under the Star-Spangled Banner (Sousa); Barataria March (Sullivan); Two Marches from German Sound Films: (a) Das ist die Liebe der Matrosen, (b) Wenn die Garde aufmarschiert; Husarenritt (Spindler); Two German Fanfare Marches: (a) Allezeit marschbereit (Kirmse), (b) March of the Eighteenth Hussars; Potpourri of Old Prussian Marches, Abmarsch der alten Wache. **9.15** (approx.), Weather, News and Sports Notes. **9.30**, Opera Music on Gramophone Records. **11.0** (approx.), Close Down.

HILVERSUM

Announced **HUIZEN**; **296.1 metres**; 20 kW. (7 kW. up to **4.40 p.m.**).—Programme of the Christian Radio Society (N.C.R.V.). **10.40 a.m.**, Song Recital by Anne Marie Boezaardt (Soprano). **11.40**, Police Notes. **11.55**, Instrumental Concert. Gramophone Records in the intervals. **1.40 p.m.**, Pianoforte Duets: Sonata in C (Mozart); Six Variations: Ich denke dein (Beethoven); Songs by Heinrich Schlusnus (Baritone) on Gramophone Records: (a) Dank sei dir Herr (Händel), (b) Die Himmel rühmen (Beethoven); Four Ländler (Schubert); Marche caractéristique (Schubert); Movement from the Ninth Symphony (Beethoven), on Gramophone Records; Two Waltz Caprices, Op. 37 (Grieg). **2.40**, Gramophone Concert: Part I, Marches: Wembley Military Tattoo; Martial Moments (arr. Winter); Florentine March (Fucik). Part II, Variety Music: Lo! here the gentle Lark (Bishop-Godfrey); Selection from The Yeomen of the Guard (Sullivan); Gold and Silver (Lehár); España (Waldteufel); The Two Little Finches (Kling); Selection from The Huguenots (Meyerbeer). **3.40**, Organ Recital. **4.25**, Programme to be announced. **4.40**, Programme for Children. **5.40**, Talk. **6.10**, Elementary English Lesson. **6.40**, Talk arranged by the Department of Buildings and Roads. **7.10**, Police Notes. **7.25**, News. **7.40**, Band Concert, conducted by Chr. Mengeveld: Homage March (Wagner); Spanish Dance from Boabdil (Moszkowsky); Selection from Hamlet (Thomas); Male Voice Choir: (a) Tehuis (Bonset), (b) Abendfriede am Rhein (Neuman); African Suite (Lacôme); Andalusian Serenade (Eilenberg). **8.40**, Talk: The Dutch Indies. **9.10**, Concert (contd.): Overture, Das ist der Tag des Herrn (Lachner); Selection from Eugene Onegin (Tchaikovsky); Male Voice Choir: Die Allmacht (Schubert); Overture, Alphons und Estrella (Schubert); Die Musik kommt (O. Straus); Potpourri, Die Amazone (von Blon); March, Unter den Siegesbanner (von Blon). **9.40** (in an interval), News Bulletin. **10.25**, Gramophone Records of Classical Music. **11.10** (approx.), Close Down.

HORBY.—See **Stockholm.**

HUIZEN

Announced **HILVERSUM**, **1,875 metres**; 8.5 kW.—Programme of the Workers' Radio Society (V.A.R.A.). **11.40 a.m.**, Concert by De Notenkrakers, conducted by D. Wins: Selection from Gipsy Love (Lehar); Slav Dance (Dvorak); Czardas (Michiels); Hungarian Dance (Brahms); Polish Dance (Moszkowsky); Tango (Albeniz); Spanish Gipsy Dance (Marquina); Gramophone Records: Waltz, Dolores (Waldteufel); Melody (Ackermans); Gavotte (Gillet); The Student passes by (Ibanez); Twilight (Bianco); Air (Berger); Gramophone Records: Waltz, Donauwellen (Ivanovici); Heinzelmannchens Wachtparade (Noack); Czardas (Fauré); In a Gipsy Camp (Oscheit). **1.25 p.m.**, Interval. **1.40**, Programme for Women. **2.40**, Programme for Children. **5.10**, Concert of Variety Music. **6.40**, Topical Talk. **7.0**, Concert by the V.A.R.A. Balalaika Orchestra, conducted by J. Povariev: Potpourri (Povariev); Air (Bukline); Czardas (Povariev); March Komm. Zigeuner (Kalman); Russian Song. **7.30**, Talk. **7.50**, S.O.S. Messages. **7.55**, Concert by a Mixed Choir and the Haarlem Orchestral Society, relayed from the Concertgebouw, Amsterdam: Conductor: A. Krelage, Jr.: Soloists: H. Nieland (Organ and Pianoforte), Mlle. Henrica (Soprano), M. Gobets (Tenor) and O. Cuperus (Baritone): Cantata No. 140 (Bach); Cantata (Mozart); Fantasia for Choir, Op. 80 (Mozart). In the interval at **8.40**, A Sketch (Pilger). **10.0**, News. **10.10**, Concert by the Little V.A.R.A. Orchestra, conducted by P. Duchant: Venice (Fabiani); Zingara (Chaminade); Spring Suite (Nevin); Waltz, Dorfschwalben aus Oesterreich (Jos. Strauss); Serenade (Wâdor); Träume (Wagner); Polish Dance (Scherwenka). Lass mich einmal deine Carmen sein (Holländer); Gramophone Records: Selection from The Merry Widow (Lehár); Potpourri of Viennese Melodies (Leopold). **11.40** (approx.), Close Down.

INNSBRUCK.—See **Vienna.**

KALUNDBORG.—See **Copenhagen.**

KIEL.—See **Hamburg.**

KLAGENFURT.—See **Vienna.**

KOSICE.—See **Prague.**

LANGENBERG

473 metres; 60 kW.—**12 Noon**, Concert, conducted by Wolf. Mussinan-Marsch (Carel); Waltz, Samt und Seide (Ziehrer); Overture, Des Wanders Ziel (Suppé); Little Spanish Suite; Selection from Lucia di Lammermoor (Donizetti); Furiant and Bohemian Polka from Schwanda the Piper (Weinberger); Waltz and Song from The Little Dutch Girl (Kalman); Potpourri, Lehariana (Geiger). **1.0 p.m.** (in an interval), News. **1.30**, Sponsored Programme with Gramophone Records. **2.30**, Exchange and Time Signal. **2.50**, Fairy Tales for Children. **3.20**, Review of New English Novels and Narratives. **3.40**, Talk: Wireless in the Schools of To-day. **4.0**, Concert from **Stuttgart.** **5.20**, Talk: The Plant World—Have Plants Souls? **5.45**, Weather, Time, Exchange, and Sports Notes. **6.0**, Talk on Social Politics: Care of Disabled Soldiers. **6.20**, Talk: Health before Everything—How can I keep healthy at Work? **6.35**, Talk: Zante, one of the Ionian Islands. **6.55**, First General News. **7.0**, Ash Wednesday Concert by the Station Orchestra, conducted by Buschkötter. Soloist: Adrian Aeschbacher (Pianoforte); Hamlet Overture (Woyrsch); Romantic Suite (Reger). **7.40**, The Marionette Theatre (Heinrich von Kleist). **8.5**, Concert (contd.): Pianoforte Concerto in A Minor (Schumann); Tone Poem, Macbeth, Op. 24 (R. Strauss). **9.5**, News and Sports Notes. **9.30**, Sacred Concert for Ash Wednesday. The Münster Choir, directed by Wernet. Soloist: Albert Rinken (Organ); Organ Improvisations: Dies irae—for Four-Part Mixed Choir (Nekes); Talk; Organ Solo: Tu auf, tu auf, o Sünderherz! (Weber); Choral Piece for Four-Part Mixed Choir: Hymn, De Sancta Maria Magdalena (Finck); Address by Father Hirsch; Choral Motet for Five-part-mixed Choir: Christ, Gottes und Marien Sohn (Mercker); Organ Solo: Toccata (Schroeder); Kyrie from the Trinitatis-Missa (Rheinberger); Chimes. **10.30** (approx.), Concert from **Frankfurt.** **11.0** (approx.), Close Down.

LAUSANNE.—See **Radio-Suisse Romande.**

LEIPZIG

389.6 metres; 120 kW.; and **DRESDEN**, **319 metres.**—**11.5 a.m.**, Concert by the Dresden Philharmonic Orchestra, conducted by Walter Armbrust: Symphonic Suite, Op. 17 (Nicode); Pieces for Chamber Orchestra, Op. 83 (Theodor Blumer); Habanera in D (Chabrier); March from Der Frauenfresser (Eysler); Selection from Der Opernball (Heuberger); Waltz on Themes from The Bird-Fancier (Zeller); Shadow Dance and Intermezzo from The Maid of the Black Forest (Jessel); Selection from The Count of Luxembourg (Lehár); March from Der Gascogner (Suppé); Gallop, Auf der Rennbahn (Lincke). In the interval at **12 Noon**, Time and News; Exchange Quotations after the Concert. **1.0 p.m.**, Advice for the Unemployed. **2.0**, Three Fairy Tales, translated from the Japanese and Chinese. **2.35**, Exchange and Market Prices. **3.0**, Musical and Literary Programme for Children. **4.50**, Exchange Quotations, Weather, and Time. **5.10**, Review of English Novels. **5.35**, Italian Lesson. **5.55**, Programme to be announced. **6.5**, Talk: Specialisation in Trades as a Foundation of Modern Industrial Conditions. **6.30**, Humorous Readings (Georg von der Gabelentz). **7.0**, The Gipsy Princess—Operetta in Three Acts (Kálmán), relayed from the New Theatre. In the interval at **8.0** (approx.), Topical Talk; at **8.10**, News; and at **9.5** (approx.), Second News. **10.0**, Dance Music and Popular Music on Gramophone Records. **11.0** (approx.), Close Down.

LINZ.—See **Vienna.**

LJUBLJANA

574.7 metres; 2.5 kW.—**5.0 to 5.30 p.m.**, Programme in English by the I.B.C. Orchestral and Vocal Concert: Selection from Rigoletto (Verdi). Songs: (a) The Blue Danube (Johann Strauss), (b) Berceuse de Jocelyn (Godard), (c) Il Bacio (Arditi), and (d) Ave Maria; Selection from The Gipsy Princess (Kalman). **5.30**, Light Music on Gramophone Records. **6.0**, Russian Lesson. **6.30**, Literary Talk. **7.0**, Benjamin Ipavic Concert, with Introductory Talk. **8.15**, Relay from the Café Zvezda. **9.0**, Time, News and Popular Music on Gramophone Records.

LYONS

LA DOUA, **465.8 metres**; 1.5 kW.—**7.30 p.m.**, Radio Gazette for Lyons and the South-East. **8.30**, Educational Talk. **8.45**, Terre inhumaine Play in Three Acts (François de Curel). After the Programme, News Bulletin.

MADRID

ARANJUEZ, EAQ, **30.43 metres**; 20 kW.—**10.30 p.m.**, Variety Concert. **10.45**, Radio Chronicle. **11.0**, Variety Concert (contd.). **11.35**, Talk. **11.40**, Light Music. **12 Midnight** (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, **424.3 metres**; 2 kW.—**7.0 p.m.**, Chimes, Exchange, Literary Talk and Request Gramophone Records. In the interval at **7.30**, Agricultural Talk. **8.15**, News Bulletin and Political Review. **8.30 to 9.30**, Interval. **9.30**, Chimes, Time and Political Review. **9.45**, Song Recital by Antonio Picatoste: Songs from Robert le Diable (Meyerbeer); Maruxa (Vives); Salvator Rosa (Gomes); La rosa del azafran (Guerrero); and Simone Boccanegra (Verdi). **10.0**, Play submitted in connection with the Radio Play Competition. **11.45**, News Bulletin. **12 Midnight**, Chimes and Close Down.

MALMO.—See **Stockholm.**

MILAN.—See **Turin.**

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—**5.25 p.m.**, Zither Solos by F. Wagner. **6.0** till Close Down, See **Prague.** **9.15** (approx.), Close Down.

MOSCOW

TRADES UNION, **1,304 metres**; 100 kW.—**4.30 p.m.**, Literary Programme. **5.30**, Concert from the Conservatoire. **8.0**, Talk in English: Social Insurance.

MOTALA.—See **Stockholm.**

MUHLACKER.—See **Stuttgart.**

MUNICH

533 metres; 60 kW. Relayed by **Augsburg** and **Kaiserslautern**, **560 metres**; and **Nürnberg**, **239 metres.**—**4.0 p.m.**, Concert from **Stuttgart.** **5.15**, Italian Lesson. **5.35**, A Tour with a Welfare Worker. **5.55**, Time, Weather and Market Prices. **6.5**, Richard Wagner as a Composer of Pianoforte Music; Illustrations by Otto Daube from the Sonata in B Flat, the Fantasia in F Sharp Minor, Sonata in A, and the Wesendonck-Album Sonata. **6.45**, Talk: A Journey through Lower Bavaria. **7.5**, Recital of Bavarian Church Cantatas. **8.5**, Talk: What the Far East thinks of Germany. **8.25**, Chamber Music by the Szanto Quartet: String Quartet in C for two Violins, Viola, and 'Cello, Op. 54, No. 2 (Haydn); String Quartet in B Flat, Op. 67 (Brahms). **9.20**, Time, Weather, News and Sports Notes.

NAPLES.—See **Rome.**

NOTODDEN.—See **Oslo.**

OSLO

1,083 metres; 60 kW. Relayed by **Fredriksstad, 365.8 metres**; **Hamar, 574.7 metres**; **Notodden, 447.1 metres**; **Porsgrund, 453.2 metres**; and **Rjukan, 447.1 metres.**—**4.0 p.m.**, Orchestral Concert, conducted by Hans Bache: Overture, Anacreon (Cherubini); Pesther-Walzer (Lanner); Selection from Faust (Gounod); Kol Nidrei (Bruch); Serenade (Grünfeld); Russian Mazurka (Glinka). **5.0**, French Lesson. **5.30**, Programme for Girls. **6.0**, Announcements, Weather and News. **6.30**, Educational Talk. **7.0**, Time. **7.1**, Concert by the Station Orchestra, conducted by Hugo Kraum: Persian March (Joh. Strauss); Overture, Orpheus in the Underworld (Offenbach); Waltz, The Wedding of the Winds (Hall); Selection from The Merry Wives of Windsor (Nicolai); Clog Dance from Czar and Carpenter (Lortzing); Ideale (Tosti); Czardas, Ilonka (Michaelis); Ballsirenen (Lehár); March Potpourri, Risi, Risi (Morena). **8.10**, Talk. **8.30**, Agricultural Prices. **8.40**, Weather and News. **9.0**, Topical Talk. **9.15**, Recitations. **9.45**, Dance Music on Gramophone Records. **11.0** (approx.), Close Down.

OSTERSUND.—See **Stockholm.**

PALERMO

542 metres; 3 kW.—**7.0 p.m.**, Popolavoro Notes, Tourist Report, Agricultural Notes, and Giornale Radio. **7.20**, Popular Music on Gramophone Records. In an interval at **7.30**, Time and Announcements. **7.45**, Orchestral Concert. Soloists: Salvatore Pollicino (Tenor) and S. De Lisi (Soprano). Overture

(Rumcan). Tenor Solos: (a) Aria from Act III of A Masked Ball (Verdi), (b) Song, L'attesa (Bettinelli); Ballet (Debussy); Three Songs for Soprano and String Quartet (Pizzetti); Nocturne (Martucci); Tenor Solos: (a) Già il sole del Gange (Scarlatti), (b) Russian Song, Sonia (Tronchi); I piccoli soldati (Pick-Mangiagalli). In the interval, Confessions before the Microphone by M. Toccari. 9.0, Song Recital. 9.55, News.

PARIS

EIFFEL TOWER; Call FLE; 1,445.7 metres; 13 kW. Time Signals (on **2,650 metres**) at **9.26 a.m.** and **10.26 p.m.** (Preliminary and 6-dot Signals).—**5.45 p.m.,** Le Journal Parlé. **7.20,** Weather Report. **7.30,** Programme for Young People. **8.0,** Talk on Science. **8.15,** News Bulletin. **8.20,** Concert, conducted by Edouard Flament; Selection from Die Teresina (O. Straus); Berceuse fantaisie (Ceilier); Violin Solo from Paganini (Lehár); Waltz, Frühlingsstimmen (Joh. Strauss). **9.0** (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW. **6.45,** Journal Parlé. **7.0,** Gramophone Concert of Light Music. **8.0,** Tourist Talk. **8.15,** Interval. **8.30,** Dramatic Programme. **10.30,** News.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW. **6.45 a.m.,** Physical Culture. **7.30,** Weather and Physical Culture (contd.). **7.45,** Le Festin de l'araignée (Roussel), on Gramophone Records. **8.0,** Press Review and Weather. **12 Noon,** Talk: Education and Sport. **12.15 p.m.,** Concert by the Radio Paris Orchestra: Selection from La Belle Hélène (Offenbach). **12.30,** Organ Recital from the Gaumont Palace. **1.0,** Exchange, News and Weather. **1.5,** Orchestral Concert (contd.): Selection from The Girl in the Taxi (Gilbert); Selection from Le Petit Faust (Hervé); Selection from The Grenadiers (Valente); Selection from Pepita Jimenez (Albéniz); Selection from François les Bas Bleus (Bernicat-Messager). In the interval, at **1.30,** Exchange. **2.0,** Exchange. **6.10,** Agricultural Talk. **6.30,** Market Prices, Weather, Agricultural Report, and Exchange. **6.40,** German Lesson. **7.0,** Medical Talk. **7.20,** Concert: Intermezzo-Gavotte (Henneberg); Joyous Rondo (Coates); Un autre baiser (Rinaldi); Gavotte (Lincke). **7.50,** Commercial Prices and News. **8.0,** Literary Readings: Histoires naturelles (Jules Renard). **8.30,** News and Weather. **8.40,** Fashion Review by Mlle. José. **8.45,** Gramophone Records: 'Cello Solos, (a) Equale (Beethoven), (b) Die Biene (Schubert); Songs (Hahn): (a) Infidelité, (b) D'une Prison. **9.0,** Concert by the Lamoureux Concert Society, conducted by Albert Wolff, relayed from the Salle Gaveau; Soloists, Rosette Anday and M. Hazart (Songs), and Nicole Rolbt and Yvonne Saint (Piano-forte); Overture, Tannhäuser (Wagner); Songs (Wagner). (a) Aria from The Rhinegold, (b) Schmerzen, (c) Träume; Concerto for Two Pianofortes (Mozart); Songs (Wagner), (a) Aria from The Twilight of the Gods, (b) Adriano's Aria from Rienzi; Selection from Prometheus (Fauré); Requiem (Fauré), by the Paris Teachers' Choral Society, conducted by Roger Ducasse.

PITTSBURGH

WESTINGHOUSE ELECTRIC, KDKA, 306 metres; 25 kW. Relayed by **W8XK** on **48.86 metres** and **25.27 metres.**—**9.0 p.m.,** Work-a-day Thoughts. **9.5,** Business News. **9.15,** Programme to be announced. **9.30,** Weather Report. **9.32,** Market Reports. **9.45,** Pianoforte Interlude. **9.50,** David Lawrence Dispatch. **9.55,** KDKA Artist Bulletin. **9.58,** Programme Announcements. **10.0,** Westinghouse Chef. **10.15,** Programme to be announced. **10.30,** The Singing Lady. **10.45,** Little Orphan Annie, from **New York. 11.0,** Booth Tarkington's Maude and Cousin Bill, from **New York. 11.15,** Time Signal. **11.16,** Weather Report. **11.17,** Teaberry Sport Review. **11.22,** Press News Reeler. **11.27,** Strange Facts. **11.29,** Temperature Report. **11.30,** Sheet Romance. **11.45,** To-day's News by Lowell Thomas, from **New York. 12 Midnight,** Amos 'n' Andy, from **New York. 12.15 a.m. (Thursday),** Programme to be announced. **12.30 to 3.15, New York** Relay. **12.30,** Five Star Theatre—Dramatisation of Short Stories. **1.0,** Eno Crime Club. **1.30,** Time Signal and Harriett Lee and her Leaders. **1.45,** The Country Doctor. **2.0,** Adventures of Sherlock Holmes. **2.30,** Woodbury Programme with Morton Downey and Donald Novis. **3.0,** D. W. Griffith's Hollywood. **3.15,** Bridge School of the Air by E. Hall Downes. **3.30,** Around the Cracker Barrel. **3.45,** Bradley Kincaid. **4.0,** Time Signal. **4.1,** Teaberry Sport Review. **4.11,** Temperature Report. **4.12,** Weather Report. **4.13,** KDKA Artist Bulletin. **4.15,** Press Last Minute News Flashes. **4.20,** Smith Ballew and his Orchestra. **5.0,** College Inn Orchestra, from **New York. 5.30,** Time Signal and Goodnight.

PORSGRUND.—See **Oslo.**

PRAGUE

488.6 metres; 120 kW.—**3.10 p.m.,** Concert by the Station Orchestra, conducted by Karel Ancerl: Overture, Vanda (Dvořák); Two Pieces from the Slovak Suite, Op. 32 (Novák); Waltz from Eva (Foerster); Ballet Music from Rosamund (Schubert); Waltz, Tales from The Vienna Woods (Joh. Strauss). **4.0,** Talk. **4.10,** Marionette Play. **5.5,** Agricultural Report. **5.15,** Talk for Workers. **5.25,** News in German. **5.30,** German Transmission: Programme for Children and Talk for Workers. **6.0,** Chimes from the Church of St. Loudmila at Kralovske-Vinohrady. **6.1,** News. **6.10,** The Funeral of Bacchus Carnival Programme from an Old Prague Brewery, arranged by Jan Vrabsky. **6.55,** Talk on the following Transmission. **7.5,** Concert by the Czech Philharmonic Orchestra, conducted by Karl Nedbal, relayed from the Smetana Hall: Divertissement (Moyzes); Prélude à l'après-midi d'un faune (Debussy); Symphony in C Minor, Op. 27, Asrael (Suk). In the interval at **8.0,** Time Signal. **9.0,** Time Signal. **9.1,** News. **9.15** (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS; 403 metres; 25 kW.; **LAUSANNE, 680 metres;** and **GENEVA, 760 metres.**—**6.0 p.m.** (from **Lausanne**), Weather, News and Announcements. **6.30** (from **Lausanne**), Agricultural Talk. **7.0** (from **Neuchâtel**), Programme for the Anniversary of Neuchâtel's Independence. The Neuchâtel Choir and the Orphéon Small Choir, conducted by Joseph Bricola. Soloist: Mlle Madeleine Marthe (Soprano). Chanson du sol natal (Jaques-Dalcroze); Mixed Choir: Neuchâtel Anthem; Address by M. Ernest Régnin; Mixed Choir: (a) Air de la Diane (Lauber), (b) Souvenir lointain (Schneeberger), (c) Appel de la montagne (Benner); Talk by Arthur Piaget; St. Guillaume, Patron Saint of Neuchâtel; Male Voice Choir: Ta mère (Bovet); Soprano Solo: Chanson du rouet de la reine Berthe (Lauber); Petite Sylvie for Mixed Choir and Soprano (Lauber). **8.0,** Concert by a String Orchestra. **8.30** (from **Geneva**), Talk: The Work of the League of Nations. **9.0,** News and Weather. **9.10** (from **Geneva**), Dance Music. **10.0** (approx.), Close Down.

RJUKAN.—See **Oslo.**

ROME

Call 1RO, 441 metres; 50 kW. Relayed by **Naples, 319 metres;** and **2RO, 25.4 metres.**—**7.0 a.m.,** Gymnastics. **7.15 to 7.30,** Giornale Radio and Announcements. **11.30,** Weather and Gramophone Records of Popular Music. **12 Noon,** Time and Announcements. **12.2 to 1.15 p.m.,** Orchestral Concert: March (Robrecht); Song (Nicholls); Slav Dance (Dvorak); Song (Robin); Selection from Si (Mascagni); Pianoforte Solo; Sing you Sinners (Hanley); Angelus (de Michedi); Pianoforte Solo; Foxtrot, Connie Lentano (Malatesta); With all my Love and Kisses (Nolge); Barcellonita (d'Anzi). In the interval from **12.30 to 12.45,** Giornale Radio and Exchange. **3.45,** Children's Radio Review. **4.10,** Announcements. **4.15,** Exchange and Giornale Radio. **4.30 to 5.30,** Vocal and Instrumental Concert. Soloists: Cesarina Buonerba (Pianoforte), Maria Sens (Soprano), Anita Ribeeova (Soprano). Four Poems for Pianoforte (MacDowell): (a) The Eagle, (b) Moon Pictures, (c) Winter, (d) The Brook. Soprano Aria from Falstaff (Verdi). Duet from Lakmé (Delibes). Pianoforte Solos: (a) Tempo di minuetto (Zanella), (b) Polichinelle (Rachmaninov). Duets: (a) Duet from Figaro (Mozart), (b) Duet from Le Cid (Masscnet). **6.10 (Naples),** Shipping and sports Notes. **6.15,** Agricultural Report and Dopolavoro Notes. **6.20,** Giornale Radio. **7.0,** Time, Announcements, and Light Music on Gramophone Records. **7.15,** Medical Talk. **7.30,** Sports Notes and Tourist Report. **7.45,** Relay from a Theatre. In the intervals, Theatre Talk, Reading of Poems, and News.

SALZBURG.—See **Vienna.**

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 379.5 metres; 50 kW. Relayed at intervals by **W2XAF** on **31.48 metres,** and by **W2XAD** on **19.56 metres.**—**7.30 p.m. to 12.15 a.m. (Thursday), New York** Relay. **7.30,** Westminster Choir. **8.0,** Two Seats in the Balcony. **12.0 Midnight,** Mischa Weisbord (Violinist). **12.15 a.m.,** Stock Reports. **12.30 to 2.0, New York** Relay. **12.30,** Van and Don. **12.45,** The Goldbergs, Comedy Sketch. **1.0,** Royal Vagabonds with Ken Murray. **1.30,** The Shadow, Mystery Drama. **2.0,** Utica Club Programme. **2.15,** Three Shades of Blue, Male Trio. **2.30,** Supper Club Orchestra and Programme Résumé.

SCHWEIZERISCHER LANDESSENDER

BEROMUNSTER, 459 metres; 60 kW.; **BASLE, 244.1 metres;** and **BERNE, 245.9 metres.**—**11.28 a.m.,** Time Signal from Neuchâtel Observatory. **11.30,** Weather and News. **11.40,** Russian Music on Gramophone Records. **12.35 p.m.,** Weather and Exchange. **12.45 to 2.30,** Interval. **2.30,** Concert by the Little Radio Orchestra. **3.0** (from **Zürich**), Programme for Children. **4.15,** Light Music on Gramophone Records. **4.30,** Weather. **4.35 to 5.30,** Interval. **5.30** (from **Zürich**), Talk: Ash Wednesday Customs in East Switzerland. **6.0,** Time, Weather, and Market Prices. **6.15** (from **Zürich**), Elementary English Lesson. **6.45** (from **Zürich**), Austrian Concert by the Radio Orchestra, conducted by Hermann Hofmann. **8.30,** Weather and News. **8.40,** Concert by the Radio Orchestra. **9.15** (approx.), Close Down.

SOTTENS.—See **Radio-Suisse Romande.**

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by **Boden, 1,229.5 metres; Goteborg, 322 metres; Horby, 257 metres; Motala, 1,348 metres; Ostersund, 770 metres;** and **Sundsvall, 542 metres.**—**4.5 p.m.,** Folk Music. **4.30,** Popular Music on Gramophone Records. **5.30,** Microphone Report from an Iron Mine, relayed from **Malmberget (436 metres). 6.15,** Weather and News. **6.30,** Song, Violin and Pianoforte Recital by Rut Bissmark, Ernst Törnquist, John Hydbom and Algot Haquinius. **7.10,** Wireless Technical Talk. **7.30,** Talk: Anecdotes about Famous Musicians. **8.0** (from **Götehorg**), Concert by the Götehorg Orchestral Society, conducted by Juan Manén and Tor Mann: Overture, Abu Casem's Slippers (Morales); Spanish Dance (de Grignon); Symphonic Poem after Calderon (Manén). **8.45,** Weather and News. **9.0,** Dance Music by the Enders Orchestra, relayed from the Bern Hall. **10.0** (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—**11.30 a.m.,** Gramophone Concert: Selection from Schwanda the Piper (Weinberger); Polka (Weinberger); Castille (Albéniz); Granada (Albéniz); Obi: Star of Eve, from Tannhäuser (Wagner); Spring Song (Mendelssohn); Minuet (Paderewsky); Prelude in C Sharp Minor (Rachmaninov); Nocturne, Liebestraum (Liszt); Verdi Potpourri; Chopin Potpourri; Selection from Stradella (Flotow). **12.45 p.m.,** News. **1.0,** Time and Exchange. **1.5,** Gramophone Concert of Light Music. **2.0 to 4.45,** Interval. **4.45,** Talk in French on Electricity. **5.0,** Orchestral Concert, conducted by Roskam: March, The Belle of Chicago (Sousa); Waltz, Faschingskinder (Ziehrer); Die Spielhür des Pompadours (Noack); Romantic Overture (Kéler-Béla); Serenade (Labo); Selection from Mireille (Gounod); Romance (Dumas); Forest Murmurs (Ziner); March, Le coq gaulois (Popy). **6.0,** Concert of Variety Music, relayed from **Lille (255.4 metres). 7.0,** Talk on Insurance. **7.15,** Popular Music on Gramophone Records. **7.30,** Time and News. **7.45,** Lottery Results. **8.0,** Le voyage en Chine Opera Comique in Three Acts (Bazin). **10.30,** Dance Music on Gramophone Records. **11.0,** Concert by the Jean Clergue Quintet, relayed from **Radio Coloniale (Paris) (25.63 metres). 12 Midnight** (approx.). Close Down.

STUTTGART

MUHLACKER; 360.5 metres; 60 kW.; and **FREIBURG, 570 metres.**—**12.30 p.m.,** Concert from **Langenberg. 1.0,** Sponsored Concert. **1.15,** Sponsored Concert, relayed from **Mannheim. 3.0,** Programme for Children. **4.0,** Concert by the Station Orchestra. Conductor: Gustav Görlich. Soloist: Hermann Lingor (Tenor). Overture, Athalia (Mendelssohn); Serenade from Stragella (Flotow); Ländliche Suite (Amadei); Aria from Martha (Flotow); Torch Dance of the Brides from Feramors (Rubinstein); Aria from The Hermit's Bell (Maillart); Two Pieces for String Quintet (Pittrich); (a) Alt-adieu, (b) Berceuse; Rakoczy Overture (Kéler-Béla). **5.15,** Time, Weather and Agricultural Report. **5.25** (from **Freiburg**), Talk on Welfare Work. **5.50,** Talk: Africa and India. **6.15,** Time and News. **6.20,** See **Frankfurt. 7.0,** Orchestral Concert. **8.0,** Authors we should know—a series of Discussions by Georg von der Bring. **8.25,** Brahms Chamber Music Concert, by the Wendling Quartet. Soloist: Walter Rehberg (Pianoforte). Sonata in C for Pianoforte, Op. 1; String Quartet No. 2 in A Minor, Op. 51. **9.10,** Time, News, Weather and Programme Announcements. **9.35,** Military Band Concert, relayed from **London. 10.45** (approx.), Close Down.

SUNDSVALL.—See **Stockholm.**

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW. —**6.0 p.m.,** News. **6.15,** Operetta Music: Selection from (a) Ciboulette (Hahn), (b) La Mascotte (Audran), (c) Les Mousquetaires au Couvent (Varney), (d) L'Eau à la Bouche (Parès and van Parys). **6.30,** Variations on Russian Songs (Rabaud), by a Symphony Orchestra. **6.45,** Popular Melodies. **7.1,** Two Pieces: Lullaby (Stravinsky), Turkish March (Mozart). In an interval, Talk. **7.15,** News, Horse-racing Results, and Market Prices. **7.25,** Local News Bulletin. **7.30,** Accordion Music. **7.45,** Extracts from Sound Films. **8.0,** Symphony Concert: Scherzo Waltz (Chabrier); Bells across the Meadows (Ketelbey); Mazurka in B Minor (Chopin); The Turkish Patrol (Michaelis); Slav Rhapsody (Friedemann). **8.30,** Opera Music: Aria from Werther (Massenet); Card Trio from Carmen (Bizet); Aria from Thais (Massenet). **8.45,** Instrumental Solos. **9.0,** Gala Concert by the La Toulousaine Concert Society, conducted by M. Palette. Popular Melodies in the Interval. **10.15,** North African News. **10.30,** Concert for Listeners in Morocco: Melody (Strasser); Waldteufel Potpourri (Eucik); Tales from The Vienna Woods (Strauss); Operetta Potpourri (Fall). **11.30 to 12 Midnight,** Programme in English by the I.B.C. The I.B.C. Half-Hour, Mr. H. K. Hitchcock announcing. Hawaiian Music: Wabash Moon; My Bluebird; Cuban Love Song; Moonlight on the Colorado; Duet, Pasadena Rose; Duet, Hawaiian Stars are gleaming; Somewhere in old Wyoming; Good-night, Sweetheart. **11.57,** I.B.C. Good-night Melody. **12 Midnight,** Weather and Announcements. **12.5 a.m. (Thursday),** Musical Programme. **12.30** (approx.), Close Down.

TRIESTE

247.7 metres; 10 kW.—**4.0 to 6.35 p.m.,** See **Turin. 6.35,** Orchestral Music from the Café Dante. **7.0** till Close Down. See **Turin.**

TRONDHEIM.—See **Oslo.**

TURIN

273.7 metres; 7 kW. Relayed by **Milan, 331.5 metres: Genoa, 312.8 metres;** and **Florence, 500.5 metres.**—**4.0 to 5.0 p.m.,** Soprano and Tenor Song Recital. **5.35,** Giornale Radio, Agricultural and Dopolavoro Notes. **6.0,** Gramophone Records of Variety Music. In the intervals at **6.20,** Giornale Radio, and at **6.30,** Time, Announcements, and Tourist Report. **7.0,** Giornale Radio and Weather. **7.15,** Medical Talk. **7.30,** A Comedy in Three Acts. After the Comedy, Orchestral Concert: Petite Suite de Concert (Coleridge-Taylor); Richette (Celani); Danza illirica (Escobar); An den Frühling (Grieg); Russian Suite (Leopold). **10.0,** Giornale Radio.

VATICAN CITY

19.84 metres (Morning), and **50.26 metres (Evening);** 10 kW.—**10.0 to 10.15 a.m.,** Religious Information in Spanish. **7.0 to 7.15 p.m.,** Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by **Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 245.9 metres;** and **Salzburg, 218.5 metres.**—**4.0 p.m.,** Concert of Light Music by the Franz Eber Orchestra. **5.15,** Talk: Hygiene and Medical Science in Ancient Rome. **5.40,** Talk: The Way to Secure Employment. **6.5,** Talk: Great Men of History: Frederick II. **6.35,** Time, Weather, and Programme Announcements. **6.45,** Concert by the Vienna Symphony Orchestra, conducted by Robert Heger; Soloist, Andreas von Rösler (Tenor): Old English Suite after Sixteenth Century Composers (Ettinger); Wer nur den lieben Gott lässt walten (Bach); Aria from Samson (Handel); Tragic Symphony in C Minor, No. 4 (Schubert); Epilogue to a Tragedy (Johanna Müller-Hermann); Aria from Stabat Mater (Rossini); Danse macabre (Saint-Saëns). **8.5,** The Return of the Prodigal Son—Play (André Gide), translated by Rainer Maria Rilke. **8.45,** Talk on the Austrian Musical Festival. **8.55,** News, Weather, and Announcements. **9.10,** Concert by the Emil Bauer Orchestra.

WARSAW

1,411 metres; 120 kW.—**10.58 a.m.,** Time and Bugle Call from the Tower of St. Mary's Church, Cracow. **11.5,** Programme Announcements. **11.10,** Popular Music on Gramophone Records. **12.20 p.m.,** Weather Forecast. **12.25 to 2.10,** Interval. **2.10,** Announcements. **2.15,** Economic Notes. **2.30,** Boy Scouts Report. **2.35,** Programme for Children. **3.0,** Popular Music on Gramophone Records. **3.20,** Talk: Mahomet and the Arabs. **3.40,** Talk: Secret Organisations in China. **4.0,** Programme for Music Teachers. **4.30,** Announcements. **4.40,** Talk. **4.55,** Programme Announcements. **5.0,** Talk on Polish Literature: Mickiewicz. **5.20,** Topical Talk. **5.25,** Light Music from the Gastronomia Café. **6.0,** Miscellaneous Items. **6.20,** Answers to Agricultural Correspondence. **6.30,** Reading. **6.45,** Radio Journal. **7.0,** Programme to be Announced. **7.15,** Concert arranged by the Society for Old Music, relayed from the Conservatoire. The Chamber Orchestra, conducted by Zalewski. Soloists: W. Lozinska (Soprano) and B. Rutkowski (Organ). Introductory Talk. Pariende non graveria—Concerto on the Immaculate Conception for Soprano, Strings, and Organ (Szarzynski); Funeral Symphony for Strings and Organ (Locatelli); Suite, Don Quixote, for Strings and Organ (Telemann); Concerto in F for Three Violins, String Orchestra, and Harpsichord (Vivaldi); Serenade, Eine kleine Nachtmusik (Mozart). In the interval, Sport Notes and Radio Journal. **9.0,** Topical Talk. **9.15,** Classical Music on Gramophone Records. **9.40,** Talk in English: The Polish Landscape in Winter, relayed from **Cracow (312.8 metres). 9.55,** Aviation Weather Report and Police Notes.

ZURICH.—See **Schweizerischer Landessender.**

MARCH 1st **WEDNESDAY** *continued*

THURSDAY
MARCH THE SECOND

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL	"The Making of a Play": Mr. Geoffrey Whitworth. Song and pianoforte recital. "The Joy Ride," by A. J. Alan. Mr. Vernon Bartlett: "Leaders in Other Lands." "Music and Youth," a programme of music for (and partly by) schoolchildren of all ages.
LONDON REGIONAL	Concert from the University, Leeds. Symphony concert from Vienna. "Songs from the Shows," feature programme by John Watt.
MIDLAND REGIONAL	Recital of Irish songs. London Regional programme.
NORTH REGIONAL	Concert from the University, Leeds. Orchestral music. Organ music.
WEST REGIONAL	Light music. Chamber music concert, relayed from the National Museum of Wales.
SCOTTISH REGIONAL	"Putting Scotland's House in Order, Scotland and her Youth," by Mr. G. E. Troup.
BELFAST	Continental musical comedy and light opera. "The Volunteer," the work of the Royal Naval Volunteer Reserve, relayed from H.M.S. Caroline.

ABROAD

BUDAPEST	6.30 p.m. Opera: "La Tosca" (Puccini), from the Royal Hungarian Opera House.
HAMBURG	7 p.m. Mozart-Schubert concert.
HILVERSUM	7.55 p.m. Concert from Amsterdam. Solo 'cellist: G. Cassado.
TURIN	8 p.m. Opera: "Rigoletto" (Verdi), from the Scala, Milan.

ATHLONE

413 metres; 60 kW.; and **CORK, 224.4 metres.**—**1.30 to 2.0 p.m.**, Time, Weather, Stock Report and Light Music on Gramophone Records. **6.0**, Popular Music on Gramophone Records. **6.15**, Programme for Children. **7.0**, Variety Music on Gramophone Records. **7.10**, Dublin Cattle Market Report. **7.20**, News. **7.30**, Time. **7.31**, French Lesson. **7.45**, Literary and Dramatic Talk. **8.0**, The Station Orchestra. **8.30**, Programme by the Emer Comedy Company. **9.0**, The Station Orchestra. **9.30**, The Caledonian Male Voice Choir. **10.0**, Dance Music on Gramophone Records. **10.30**, Time, News, Weather and Close Down.

BARCELONA

RADIO-BARCELONA, Call EAJ1, 348.8 metres; 8 kW.—**6.0 p.m.**, Trio Concert. **6.15** (in an interval), Literary Programme. **7.0**, Request Gramophone Concert. **7.30**, Exchange Quotations and Talk in Catalan: Alfonso the Magnanimous, relayed from the University. **8.0**, Popular Music on Gramophone Records, and News. **9.0**, Chimes from the Cathedral, Weather Forecast, Exchange Quotations, and Market Prices. **9.5**, Relay of an Opera from the Gran Teatro del Liceo. **11.0** (in an interval), News Bulletin.

BARI

269.8 metres; 20 kW.—**7.0 p.m.**, Agricultural Notes, Tourist Talk, and Dopolavoro Announcements. **7.20**, Giornale Radio and Weather Forecast. **7.30**, Time Signal and Announcements. **7.35** (approx.), Military Band Concert, conducted by Salvatore Rubino: Inno a S. Irene (Mercadante); Overture and Selection from Norma (Bellini); Reminiscences of Apulia (Van Westerhout); Symphonic Poem, Feste romane (Respighi); Overture, La battaglia di Legnano (Verdi). In the interval, Talk. **9.30**, Concert relayed from the Caffè del Levante. **9.55**, News Bulletin.

BASLE.—See **Schweizerischer Landessender.**

BELGRADE

430.4 metres; 2.8 kW.—**6.0 p.m.**, Gramophone Concert of Popular Music. **7.5**, Programme from **Vienna. 9.0**, News, followed by Concert from the Ratnicki Dom Restaurant.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—**12.45 p.m.**, News Bulletin. **1.0**, Gramophone Concert of Sound Film Music, relayed from **Berlin (Witzleben). 2.0**, Musical Programme for Children. **2.30**, Weather and Exchange. **2.45**, Reading (Heinrich Federer). **3.0**, Talk: Are German Women interested in Politics? **3.30**, Concert from **Berlin (Witzleben). 4.10**, Talk on Philosophy. **4.30**, Hugo Wolf Song Recital by Joachim Andresen: Die Fussreise Biterolf; In der Frühe; Der Freund; Der Gärtner; Der Musikant; Verschwiegene Liebe; Heimweh. **5.0**, Talk: How to equip a Provincial Museum. **5.30**, Music for Blockflute and other Instruments: Solo Sonata for Recorder and Thorough Bass, Op. 1, No. 11 (Händel); Trio Sonata in C Minor for Recorder, Violin, and Thorough Bass, Op. 2, No. 1 (Händel). **5.55**, Weather and Announcements. **6.0**, German Lesson for Germans. **6.30**, Poetry Reading. **6.35**, Agricultural Talk. **7.0**, Programme for All German Stations. Relay of the Demonstration from the Sportpalast. Speech by Adolf Hitler. **8.15**, Programme from **Frankfurt. 9.0**, Weather, News, and Sports Notes. **9.45**, Weather Report for Shipping. **10.0**, Dance Music from **Berlin (Witzleben). 11.0** (approx.), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—**6.0 p.m.**, Talk: Count von Schwerin-Krosigk, Minister of State. **6.10**, Talk: The Intellectual Break-up of the Age. **6.25**, The Watchword. **6.30**, Concert by the Orchestra and Choir of the Bayreuth Festspielhaus on Gramophone Records. **7.0**, Transmission for all German Stations; Speech by Reichskanzler Adolf Hitler, relayed from the Sportpalast. **8.15**, Max Trapp Concert by the Station Orchestra, conducted by the Composer: Symphonic Suite, Op. 30; Violin Concerto in A Minor, Op. 21. **9.15**, Weather, News, and Sports Notes. **9.30**, Dance Music. **11.0** (also relayed by **Zeesen** on **31.38 metres**). Extracts from the Daily Life of a Big City.

BERNE.—See **Schweizerischer Landessender.**

BEROMUNSTER. — See **Schweizerischer Landessender.**

BODEN.—See **Stockholm.**

BODO.—See **Oslo.**

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—**7.30 p.m.**, News and Exchange. **7.40**, Talk: The Teaching of Handcrafts in Secondary Schools. **7.55**, Lottery and Charade Results. **8.0**, Talk on Wines. **8.15**, News Bulletin and Weather Forecast. **8.30**, La nouvelle Idole—Play in Three Acts (François de Curel).

BRATISLAVA

279 metres; 14 kW.—**5.35 p.m.**, Sonata for Pianoforte, Op. 31, No. 2 (Beethoven). **6.0**, See **Prague. 6.10**, Literary Review. **6.25**, See **Brno. 6.40**, See **Prague. 7.5**, One-Act Comedy (Cyprian Cech). **7.45**, Popular Music on Gramophone Records. **8.0**, See **Prague. 9.15**, Light Music on Gramophone Records. **10.0** (approx.), Close Down.

BREMEN.—See **Hamburg.**

BRESLAU

325 metres; 1.5 kW.; and **GLEIWITZ, 253 metres.**—**12.15 p.m.**, Concert by the Silesian Philharmonic Orchestra, conducted by Hermann Behr. **12.45**, Time, Weather, News and Exchange. **1.5**, Song Recital on Gramophone Records. Gesang Weylas, from Du bist Orplid mein Land (Wolf); Aria from The Flying Dutchman (Wagner); Aria, Allmächt'ge Jungfrau, from Tannhäuser (Wagner); Erlkönig (Schubert); Du bist die Ruh' (Schubert); Gretchen am Spinnrade (Schubert); Waltz from The Tales of Hoffmann (Offenbach); Waltz, Frühlingsstimmen (Joh. Strauss). **1.45**, Sponsored Programme, with Gramophone Records. **2.10**, Agricultural Prices. **2.30**, Talk: Week-ends in March. **2.40**, Book Review. **3.10**, Concert by the Station Orchestra. Selection from La Bohème (Puccini); Wedding Waltz from The Veil of Pierrette (Dohnanyi); Violin Solo: Russian Song from the Concerto, Op. 20 (Lalo); Hungarian Ballet, Etelka (Ailbout). **3.45**, Programme for Children. **4.15**, Agricultural Prices. **4.20**, Concert of Chamber Music. **4.45**, Talk on Silesia. **5.5**, Talk for Workers. **5.30**, Scientific Speeches, with Introductory Talk. **6.0**, Concert by the Station Orchestra, conducted by Franz Marszalek. Soloist: Hans W. Bachmann (Baritone). Florentine March (Fucik); Overture, The Ace of Hearts (Künneke); Selection from I Pagliacci (Leoncavallo); Waltz, Accelerationen (Joh. Strauss); Humoresque (Dvorák); Hindu Song from Sadko (Rimsky-Korsakov); Königsgrenadier-Marsch (Teichert-Gerigk). In an interval at **6.30** (approx.), Weather for Farmers. **7.0**, Transmission for all German Stations, relayed from **Berlin (Witzleben). 8.15**, Announcements. **8.25**, Flight from Venice—Radio Play (Robert Walter). **9.35**, Time, Weather, News, Sports Notes and Programme Announcements. **9.55**, Reading in Esperanto from Silesian Literature. **10.5**, Talk: The Frontier District of East Prussia as a Travel Objective. **10.20** (approx.), Close Down.

BRNO

342 metres; 55 kW.—**3.10 p.m.**, Concert by the Station Orchestra, conducted by B. Bakala. **4.10**, News for Young People. **4.20**, See **Prague. 4.50**, Talk. **5.0**, Literary Talk. **5.15**, See **Prague. 5.25**, German Transmission: News and Two Talks. **6.0**, See **Prague. 6.25**, Talk. **6.40**, See **Prague. 7.20**, Reading of Czech Poetry. **7.50**, Popular Music on Gramophone Records. **8.0**, See **Prague. 9.15**, Popular Music on Gramophone Records. **10.0** (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—**12 Noon**, Popular Music on Gramophone Records. **1.0 p.m.**, Le Journal Parlé. **1.10**, Concert by the Small Station Orchestra, conducted by P. Leemans. Suite, Russian Scenes (Bantock); Old Spanish Song (Aubert); Humorous Dance (Palmgren); Second Suite from L'Arlesienne (Bizet); Serenade from Les Millions d'Arlequin (Drigo); Selection from Passionnément (Messager). **5.0**, Concert by the Radio Orchestra, conducted by Franz André. Marche baroque (Goyens); Extravaganzen (Morena); Waltz Novelty for Trumpet (Siegrist); Jinny (d'Agrèves); Dolly (d'Agrèves); Gavotte la Vallière (d'Agrèves); Horn Solo: Dans la Forêt (Frémolle) Dolores (Waldteufel); Hungarian March (Berlioz). **5.30**, Programme for Children. **6.0**, Talk: Interior Decoration. **6.15**, Gramophone Concert: Minuet and Finale from the Divertimento (Haydn); Rigaudon from Le Tombeau de Couperin (Ravel); Minuet and Variations from the Sonata (Stamitz); L'Emir d'amour (Knosp); Frühlingsnacht (Schumann-Liszt); Siegfried Idyll (Wagner); Les trois petits oiseaux (Pierné); Prelude (Prokoffev); Symphonic Poem, Tamara (Balakirev); Allegro Barbaro (Bartok). **7.15**, Talk for Workers. **7.30**, Wireless Review and Horticultural Hints for March. **8.0**, Concert by the Symphony Orchestra, conducted by Jean Kumps: Carnaval à Paris (Svendsen); Petite Suite (Ducasse); Suite funambulesque (Busser); Dramatic Interlude; Talk; Romance in F for 'Cello (Rubinstein-d'Indy); Ballet Music from Le Cid (Massenet); Solveig's Song (Grieg); Anitra's Dance (Grieg); Polonaise in E (Liszt). **10.0**, Le Journal Parlé. **10.10**, Old and Modern Dances on Gramophone Records. **11.0** (approx.), Close Down.

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW. Programme in Flemish.—**12 Noon**, Concert by the Small Station Orchestra, conducted by Pierre Leemans. Music composed by Members of this Orchestra. Cortège orientale (Leemans); Four Lyric Pieces (Douliez): (a) Au Printemps, (b) Scherzettino, (c) Intermezzo, (d) Une larme. Violin Solos (Wigy) by the Composer: (a) Capriccio on a Foxtrot Rhythm, (b) Berceuse. Ma poupée chérie (Macker); Suite for Pianoforte, Erotikon (Douliez) by the Composer; Russian Rhapsody, Moskowa (Leemans); Petite Suite (Kalkman). **1.0 p.m.**, Le Journal Parlé. **1.10**, Popular Music on Gramophone Records. **5.0**, Concert by the Symphony Orchestra, conducted by Jean Kumps. Overture, Der Freischütz (Weber); Fantasia on Old Flemish Songs (De Greef); Interlude dans le mode antique (Glazunov); Fete polonaise (Chabrier); Marche joyeuse (Chabrier). **5.45**, Programme for Children. **6.30**, Concert by the Small Orchestra, conducted by P. Leemans. Overture, Il Trovatore (Verdi); Scherzo for Flute, Fanfalluca (Gilson); The Canary (Poliakin); The Clock and the Dresden Figures (Ketelbey); Selection from Nina Rosa (Romberg). **7.15**, Film and Book Review. **7.30**, Talk for Women. **8.0**, Concert by the Radio Orchestra. **8.45**, Talk: The Catholic University at Louvain. **9.0**, Choral and Orchestral Concert: March for Drums and Trumpets (Bury); Overture, Le Secret de Pierrot (Popy); Choir and Orchestra: In a Monastery Garden (Ketelbey); Choir: (a) O Domine (Palestrina), (b) Ecce quomodo (Händel); Selection from Mors et Vita (Gounod); Choir: (a) Rust in vrede (Haegen), (b) O Nacht (Platel); Polka concertante for Horn, Myrtho (Petit). **9.55**, Evening Prayer. **10.0**, Le Journal Parlé. **10.10**, Concert (contd.): Turkish March (Mozart); Dimanche (Veremans); Selection from Hamlet (Thomas); A travers les oeuvres de Benoit (Benoit); Song, De Vlaming heeft geen taal (Roels); Vlaamsche kermis (Hullebroeck); Vlaanderen (Veremans); Mijn Vlaanderen heb ik hartlijk lief (Anthemnis); De Vlaamsche Leeuw (Miry). **11.0** (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—**4.0 p.m.**, Concert of Light Music and Romanian Music by the Dinico Orchestra. **5.0**, News and Time Signal. **5.10**, Talk. **5.25**, Concert (contd.). **6.0**, Talk on Romania: Her Mineral Waters. **6.40**, Tristan und Isolde—Opera in Three Acts (Wagner) on Gramophone Records. In the intervals: News.

BUDAPEST

550 metres, 18.5 kW. Programme also relayed on **840 metres** from **6.25 p.m.** till Close Down.—**4.0 a.m.**, Agricultural Talk. **4.30**, Pianoforte Recital by Miklos Papp. **5.5**, Cigány Music by the Josef Vidak Band. **6.0**, English Lesson. **6.30**, Tosca—Opera in Three Acts (Puccini), relayed from the Royal Opera House. **9.0**, Announcements, followed by Concert by the Ostende Jazz Band and the Gyula Horvath Cigány Band, relayed from the Café Ostende. Paul Kalmar (Songs).

CASSEL.—See **Frankfurt.**

COPENHAGEN

281 metres; 0.75 kW.; and **KALUNDBORG, 1,153 metres**; 7.5 kW.—**11.0 a.m.**, Time Signal and Chimes from the Town Hall. **11.2**, Concert by the Max Skalka String Ensemble, relayed from the Hotel d'Angleterre. **1.0 to 2.0 p.m.**, Interval. **2.0**, Concert by the Station Orchestra conducted by Emil Reesen. Soloist: Nora Elé (Songs): Overture, Der Waffenschmied (Lortzing); Selection from Romeo and Juliet (Gounod). Song and Dance from Acuarelas Valencianas (Chavarri); Waltz, España (Waldteufel); Allegra di Bravura and Tarantella from the Gipsy Suite (German); Six Songs; March from The Chocolate Soldier (O. Straus); Selection from Monsieur Beaucaire (Messager); Intermezzo from Tiefland (d'Albert); Air de ballet and Fête bohême from Scènes pittoresques (Massenet); Dance from Wayland the Smith (Henriques); Homage March from Sigurd Jorsalfar (Grieg). **4.0**, Programme for Boys. **4.40**, Exchange and Fish Market Prices. **4.50**, Talk: A Visit to Afghanistan. **5.20**, English Lesson. **5.50**, Weather. **6.0**, News. **6.15**, Time. **6.16**, Talk for Workers. **6.45**, Danish Lesson. **7.10**, Song Recital, with a Talk by Carl Langballe. **8.0**, Concert of Danish Music by the Station Orchestra, conducted by Launy Grondahl. Overture, Festen paa Kenilworth (Weyse); Jagten (Gade); Hildas Drom (J. P. E. Hartmann); Elverpigernes Dans (Gade); Prelude to Act II of Et Folkesagn (Hartmann); Wedding Waltz (Gade); Overture, William Shakespeare (Kuhlau). **8.45**, Talk: Denmark and Iceland as Allies. **9.15**, News. **9.30**, Trio in G Minor, Op. 15, for Pianoforte, Violin, and 'Cello (Smetana). **10.5**, Concert of Dance Music, conducted by Kai Julian, relayed from the National Scala. In an interval at **11.0**, Time Signal and Chimes from the Town Hall. **11.30** (approx.), Close Down.

CORK.—See **Athlone.**

CRACOW

312.8 metres; 10 kW.—**6.0 p.m.**, The Letter Box. **6.15**, Miscellaneous Items and Announcements. **6.30**, See **Warsaw. 9.15**, Orchestral Concert of Light Music and Dance Music, relayed from the Pavilion Restaurant. **9.55**, See **Warsaw. 10.0**, Relay of Foreign Stations. **11.0**, Bugle from the Tower of St. Mary's Church.

DANZIG.—See **Heilsberg.**

DRESDEN.—See **Leipzig.**

FECAMP

225.9 metres; 10 kW.—**12 Noon**, Popular Music on Gramophone Records. **12.30 p.m.**, News Bulletin. **12.45**, Programme for Children. **6.0 to 7.0**, Programme in English by the I.B.C., C. Danvers Walker, R. Chene, B. McNabb, and W. Crofton Announcing. **6.0**, Concert for Brighton Listeners; Orchestra: Souvenir de Capri (Becce); Songs: (a) All through the Night (Traditional), (b) Beware of the Maiden (Craske); Orchestra: Liebesfreud (Kreisler); Songs: (a) The Arrow and the Song, (b) Good Old-fashioned Chorus (Ames), (c) Honour and Arms (Händel); Orchestra: Autumn Leaves (Pepper). **6.20**, Concert for Hove Listeners: Selection from Frederica (Lehár); Song: I give my Heart, from The Dubarry (Millöcker-Mackeben); Selection from Waltzes from Vienna (arr. Griffiths); Song: The Dubarry (Millöcker-Mackeben); You are my Heart's Delight, from The Land of Smiles (Lehár); Selection

from The New Moon (Romberg). 7.0, Local News and Light Music on Gramophone Records. 7.30, Radio Gazette. 8.0, The Listeners' Half Hour and News. 8.30, Concert relayed from the Town Hall, **Rouen.** 10.0 till Close Down, Programme in English by the I.B.C. 10.0, To-day's the Day; Round the Marble Arch; By the Bend of the River; Paradise; Goodnight, Vienna; Hurt; Just another Dream of you; Selection from On with the Show; When the Band goes marching by; It ain't no fault of mine; I wonder why; Lullaby of the Leaves; Five Minutes to Twelve; Bathing in the Sunshine; I love a Parade. 11.0, Songs of the Sea; Orchestra: Over the Waves (Rosas); Songs: (a) At Santa Barbara (Kennedy Russell), (b) The Drunken Sailor (Terry); Orchestra: Selection from Merrie England (German); Songs: (a) Four Jolly Sailormen (German), (b) Shenandoah (Terry); Orchestra: Gold and Silver (Lehár). 11.30, Orchestral Concert: Musical Gems (Shalmar); Barcarolle from The Tales of Hoffmann (Offenbach); Black Eyes (Ferraris); The Wayside Shrine (Sherwood); Love's Dream after the Ball (Czibulka); Around the Volga (Borchert). 12.0 **Midnight.** Wishing and waiting for love; Just Plain Folk (Gilbert); Am I blue? (Akst); The Heart of the Sunset (Nicholls); Sleep Baby, Sleep (Tucker); I'll never ask for more (Ahlert); Take your Tomorrow (Razof); Hello Sunshine (Murray). 12.30 **a.m. (Friday),** Concertina Solos: Lopeziana (Alter); Irish Medley (arr. Dale); Marilyn (Alter); Scottish Reels (arr. Dale); Hornpipe Medley (arr. Dale); Bonnie Lass o' bon accord (Skinner); Orange and Blue (arr. Dale); The Road to the Isles (Traditional). 1.0, American Songs: Can't we talk it over?; Hallelujah, I'm a Bum; Dinah; I don't work for a living; Fortunes Galore; Minnie the Moocher; The Railroad Boomer; Rhapsody in love. 1.30, Pianoforte and Song Recital. Pianoforte Solo: Selection from The Big Pond (Fain). Songs: (a) Absent-minded (Summers), (b) Memories of you (Blake). Pianoforte Solo: One Night alone with you (Jeffreys). Songs: (a) Girl of a Million Dreams (Gay), (b) The Kid next Door (Leslie), (c) My kind of love (Alter). Pianoforte Solo: The Squirrel Dance (Elliot-Smith). 2.0, Dance Music: The Sun has got his Hat on; Strangers; singing in the Moonlight; Paradise; Let that be a Lesson to you; When the Band goes marching by; Let me be your Carmen for To-night; It's that Extra little Something; Pagan Moon; I've gone and lost my little Yo Yo; Leave the Rest to Old Man Moon; The Gag Song; The Old Kitchen Kettle; Same Old Moon; At Eventide; Through that Open Window. 2.57, I.B.C. Good-night Melody. 3.0 (approx.), Close Down.

FLENSBURG.—See **Hamburg.**

FLORENCE.—See **Turin.**

FRANKFURT

259 metres; 17 kW.: CASSEL, 245.9 metres; and TRIER, 259.3 metres.—5.50 p.m., Talk: German Aviation in 1933. 6.15, Time. Programme Announcements, Weather and Exchange. 6.20, International Review. 6.35, Distress Everywhere—Stories of the Crisis. 7.0, Transmission for all German Stations, relayed from **Berlin (Witzleben).** 8.15 (also relayed on **Zeesen (31.38 metres),** Symphony No. 11 in E Flat, Op. 55—the Eroica (Beethoven), by the Station Orchestra, conducted by Hans Rosbaud. 9.0, Time, News, Weather and Sports Notes. 9.15, Concert of Light Music by the Station Orchestra, conducted by Willy Nanc. 10.0 (approx.), Close Down.

FREDRIKSSTAD.—See **Oslo.**

FREIBURG.—See **Stuttgart.**

GENEVA.—See **Radio-Suisse Romande.**

GENOA.—See **Turin.**

GLEIWITZ.—See **Breslau.**

GOTEBORG.—See **Stockholm.**

GRAZ.—See **Vienna.**

HAMAR.—See **Oslo.**

HAMBURG

Call ha (in Morse), **372 metres; 1.5 kW.** Relayed by **Bremen, 269.8 metres; Flensburg, 227.4 metres; Hanover, 566 metres;** and **Kiel, 232.2 metres.**—5.0 p.m., Variety Programme. 5.55, Frankfurt Exchange. 6.0, Health Talk. 6.25, Weather Report. 6.30, Hermann Kesten reads from his own Works. 7.0, Mozart and Schubert Concert by the Hamburg Philharmonic Orchestra, conducted by José Eibenschütz: Symphony in E Flat (Mozart); Symphony in B Minor (the Unfinished) (Schubert). 8.0, News. 8.10, An Appeal for the Theatre by Guido Kolkenheyer, Eugen Klöpfer, and F. C. Kobbe. 9.10, Time and News. 9.20, Topical Talk. 9.30, Dance Music. In the interval at 10.20, Ice Report.

HANOVER.—See **Hamburg.**

HEILSBERG

276.5 metres; 60 kW: and DANZIG, 453.2 metres.—12.5 p.m., Popular Music on Gramophone Records. In the interval at 12.20, News. 1.30 to 2.0, Interval. 2.0, Agricultural Prices and Exchange Rates. 2.30, Programme for Young People. 3.0, Poems and Songs for Young People. 3.30, Concert by the Small Station Orchestra, conducted by Eugen Wilcken. Overture, Le Roi l'a dit (Delibes); Selection from Le Cid (Massenet); Selection from Der Wildschütz (Lortzing); Suite, Caucasian Sketches (Ippolitov-Ivanov); Overture, La Dame Blanche (Boieldieu). 4.45, Book Review. 5.15, Agricultural Prices. 5.20, Ice Report. 5.30, Agricultural Talk. 6.0, Song Recital by Hans Eggert: Songs (Lendvai): (a) Abbitte, (b) Einsamkeit, (c) Das Bleibende im Wandel; Dünenlied (Graener); Die Düne (Ochs); Taufe auf der Nehrung (Ochs); Songs (Knab): (a) Die Quelle, (b) Der Abschied. 6.30, English Lesson for Beginners. 6.55, Weather and News. 7.0, Transmission for all German Stations. Speech by Reichskanzler Adolf Hitler. 8.15, Joy and Laughter—Games and Dancing. Concert of East Prussian Folk Songs. Recitations and Songs to the Lute. The Small Station Orchestra and Choir conducted by Karl Hrubetz and Soloists: Hermann Kowski, Max Weber and Kurt Wernick. 9.0, Weather, News and Sports Notes.

HILVERSUM

Announced **HUIZEN, 296.1 metres;** 20 kW (7 kW up to **4.40 p.m.**).—**11.55 a.m. to 1.40 p.m.,** Programme of the Catholic Radio Society (K.R.O.). Sextet Concert. 1.40 till Close Down. Programme of the Christian Radio Society (N.C.R.V.). 1.40, Handicrafts Lesson. 2.40, Programme for Women. 3.10 to 3.40, Interval. 3.40, Bible Reading and Sacred Music. 4.40, Organ Recital. 5.25, Handicrafts Lesson for Young People. 5.55, Talk. 6.25, Dressmaking Lesson. 6.40, Press Review. 7.10, Police Notes. 7.25, Religious News. 7.40, Concert by the Het Lied Choir, conducted by M. Akkerman, relayed from Leerdam, with Gramophone Records in the intervals. 8.40, Talk for Parents. 9.10, Concert by the Little N.C.R.V. Orchestra, conducted by P. v. d. Hurk. Soloist: L. A. Schuurman (Organ). Suite (Purcell); Water Music (Handel); Concerto in F, No. 4, for Organ and Orchestra (Handel); Fantasia Sextet, Op. 7 (Goossens); Lyric Interlude (Bax); Jubel Ouverture (Weber); Potpourri (Rhode); Selection from The Gipsy Baron (Joh. Strauss); Song, An der Weser (Prassel); Selection from The Bohemian Girl (Balfe). In the interval at 9.40, News. 9.55, Light Music on Gramophone Records. 11.10 (approx.), Close Down.

HORBY.—See **Stockholm.**

HUIZEN

Announced **HILVERSUM, 1,875 metres;** 8.5 kW. Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.).—**11.41 a.m.,** Concert by the Small Wireless Orchestra, conducted by Nico Treep: Overture, Berlin, wie es weint und lacht (Conradi); Aux bords du Nil (Platen); Waltz, Dorfschwalben aus Oesterreich (Jos. Strauss); Felix the Cat (Kark); Gramophone Records: Selection from Le tribut de Zamora (Gounod); Minuet (Bolzoni); Extracts from Undine (Lortzing); Folies bergère (Lincke); Gramophone Records: Selection from The Circus Princess (Kalman); Humorous Variations on Was kommt dort von der Höh (Suppé); March, Heil Europa (Blon). 1.40 p.m., Talk. 2.10, Interval. 2.25, Popular Music on Gramophone Records. 2.40, Talk. 3.25, Variety Music on Gramophone Records. 3.40, Talk. 4.10, Pianoforte Recital by Lotte Kramp: Gavotte and Variations in A Minor (Rameau); Fantasia in D Minor (Mozart); Legend, St. François d'Assise (Liszt). 4.40, Programme for Children. 5.10, Concert by the Wireless Chamber Orchestra, conducted by Nico Gerharz: Overture, die schöne Galathée (Suppé); Swedish Sketches (Torsten-Fetras); Verdi Potpourri (Weninger); A Musical Snuff-box (Nikolaievski); Air de Ballet (Gillet); Spleen (d'Ambrosio); Sous le ciel de Florence (Ackermans); Maria Mari (di Capua); Waltz, Amour et printemps (Waldteufel). 6.10, Talk. 6.40, Concert (contd.): March, Hoch meine Musika (Blankenburg); Tanz der millionen (Fucik); Suppé Potpourri (Morena). 7.10, English Lesson. 7.40, Time and News. 7.45, Variety Music on Gramophone Records. 7.55, Orchestral Concert, relayed from the Concertgebouw, **Amsterdam.** Soloist: Gaspar Cassado (Cello). 10.10, Concert of Light Music by Kovacs Lajos and his Orchestra. Soloist: Bob Scholte (Songs). 10.40, News. 10.50, Orchestral Concert (contd.). 11.40 (approx.), Close Down.

INNSBRUCK.—See **Vienna.**

KALUNDBORG.—See **Copenhagen.**

KIEL.—See **Hamburg.**

KLAGENFURT.—See **Vienna.**

KOSICE.—See **Prague.**

LAHTI

1,796 metres, 40 kW.; and **HELSINKI, 368.1 metres.**—**5.40 p.m.,** Song Recital by Tuomi Elmgren-Heinonen. 6.5, Talk. 6.30, 'Cello Solos by Ossian Fohström. Elegy (Sibelius-Schnéevoigt); Herbststimmung (Kuula); Prelude (Väinö Raitio); Serenade (Ole Edgren); Melody (Schnéevoigt). 6.55, Humorous Monologue. 7.10, Concert by the Station Orchestra, conducted by Erkki Linko. 7.45, News in Finnish. 8.0, News in Swedish.

LANGENBERG

473 metres; 60 kW.—**12 Noon,** Concert, conducted by Eysoldt: Torch Dance (Meyerbeer); Lyric Suite (Karganov); O Jugend, wie bist du so schön (Abt); An der Weser (Pressel); Selection from Coppélia (Delibes); Rhapsody in C (Dohnanyi); Fascination (Marchetti); Dances of the Elves (Heykens); Potpourri, Deutsche Marschperlen (Blankenburg). In the interval at **1.0 p.m.,** News. 1.30, Sponsored Programme with Gramophone Records. 2.30, Economic Notes and Time. 2.50, Programme for Children. 3.20, Notes on the Broadcasts for Schools. 3.30, Programme to be announced. 4.0, See **Munich.** 5.20, French Lesson. 5.45, Weather, Time, Economic Notes, and Sports Results. 6.0, Talk: The State and Economics. 6.20, Topical Talk. 6.30, Talk: The Industrial Development of North-Eastern Europe. 6.55, News. 7.0, See **Berlin (Witzleben).** 8.20 (approx.), Concert by the Small Station Orchestra, conducted by Eysoldt. 9.5, News and Sports Notes. 9.25, Songs and Verse. 9.50, Serenade and Dance Music, conducted by Eysoldt. 11.0 (approx.), Close Down.

LAUSANNE.—See **Radio-Suisse Romande.**

LEIPZIG

389.6 metres; 120 kW.; and **DRESDEN, 319 metres.**—**11.5 a.m.,** Gramophone Concert of Italian Opera Music. 12 **Noon,** News, Weather, and Time. 12.15 **p.m.,** Wind Instrument Concert on Gramophone Records. After the Concert, Exchange Quotations. 1.0, Film Review. 1.30, Talk: Emergency Work for Young People. 2.0, Ready Reckoning Lesson for Young People. 2.35, Market Prices. 3.0, Concert by the Small Station Orchestra, conducted by Willy Steffen: March, Mit Standarten (Blon); Overture, Giralda (Adam); Suite for Strings, Op. 6 (Bloch); Waltz, Trio and Duet from Der Rosenkavalier (Richard Strauss); Overture, The Thieving Magpie (Rossini); Berceuse in D (Bizet); A Wedding Day on Troldhaugen (Grieg); The March of the Tin Soldiers (Jessel); Florentine March (Fucik). 4.30, Weather and Time. 4.50, Exchange Quotations. 5.0, Talk: Work for those leaving Secondary Schools. 5.20, Talk for Taxpayers. 5.30, Spanish Lesson. 5.50, Programme to be Announced. 6.0, Folk Songs of the Sudetic Alps—a Radio Sequence (Hans Christoph Kaergel), by the Choir of the Greater Dresden School Union. 7.0, Transmission for all German Stations relayed from **Berlin (Witzleben).** 8.20, The Second Symphony, in C minor (Bruckner) by the Orchestra of the Friedrichstheater, Dessau. 9.20, News, Bulletin, followed by Silent Night.

LINZ.—See **Vienna.**

LJUBLJANA

574.7 metres; 2.5 kW.—**6.0 p.m.,** Talk on Economics. 6.30, The Letter Box. 7.0, Concert of Military Music. 9.0, Time, News and Light Music.

LYONS

LA DOUA; 465.8 metres; 1.5 kW.—**7.30 p.m.,** Radio Gazette for Lyons and the South-East. 8.30, Concert by a Symphony Orchestra, conducted by Pierre Lorraine. Soloist: Mlle. Elaine Carrier (Songs). Overture, Joseph (Méhul); Song from Dardanus (Rameau); Andante for Flute (Mozart); Turkish March (Mozart); Songs from Figaro (Mozart); Walther's Prize Song from "The Mastersingers"; March in E flat (Gounod); Prelude to Thamara (Dneonay); Song from Fortunio (Messager); Intermezzo for Horn and Orchestra (Pierné); Song: Nuit de Venise (Massenet); Norwegian Suite (Dougals). In the interval and after the Concert, Light Music by the Instrumental Ensemble. After the Programme, News.

MADRID

ARANJUEZ, EAQ, 30.43 metres; 20 kW.—**10.30 p.m.,** Popular Music. 10.45, Radio Chronicle. 11.0, Talk on Popular Spanish Songs, with Illustrations. 12 **Midnight** (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 424.3 metres; 2 kW.—**7.0 p.m.,** Chimes, Exchange. Programme for Children and Request Gramophone Records. 8.15, News Bulletin. 8.30 to 9.0, Interval. 9.0, English Lesson by the Linguaphone Method. 9.30, Chimes, Time, Political Review, Astronomical Talk and Concert conducted by Martin Doming), relayed from the Hotel Nacional. 11.45, News Bulletin. 12 **Midnight,** Chimes and Close Down.

MALMO.—See **Stockholm.**

MILAN.—See **Turin.**

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—**5.30 p.m.,** German Transmission: Two Talks. 6.0, See **Prague.** 6.25, See **Brno.** 6.40, See **Prague.** 7.20, Concert by the Station Orchestra, conducted by B. Tvrdy, Furiante from the Czech Suite (Dvorak); Hungarian Dance, No. 6 (Brahms); Krakowiak from Pan Swardowski (Rozycki); Cossack Dance, Op. 43, No. 5 (Moszkowski); Russian Dance from The Nutcracker (Tchaikovsky); Caucasian Dance from The Demon (Rubinstein); Serbian Dance (Sistek); Rondalla Aragonesa (Granados); German Dance (Reger); Norwegian Dance, Op. 35, No. 2 (Grieg); Moravian Dance (Janacek). 8.0, See **Prague.** 9.15, Popular Music on Gramophone Records. 10.0 (approx.), Close Down.

MOSCOW

TRADES UNION; 1,304 metres; 100 kW.—**4.25 p.m.,** Rigoletto—Opera in Three Acts (Verdi), relayed from the Branch of the Grand Theatre. 8.0, Review of the Week and Answers to Correspondents in French.

MOTALA.—See **Stockholm.**

MUHLACKER.—See **Stuttgart.**

MUNICH

533 metres; 60 kW. Relayed by **Augsburg** and **Kaiserlautern, 560 metres,** and **Nürnberg, 239 metres.**—**4.0 p.m.,** Concert conducted by Erich Kloss. Overture, Aseanio in Alba (Mozart); Two Pieces (Wagner): (a) Träume, (b) Albumblatt; Brahms Fantasia; Cradle Song and Serenade (R. Strauss); Bolero (Nicodé); Waltz from Lilac Time (Schubert-Berté); Russian Romance (Frind); Japanese Carnival (de Basque). 5.15, Talk: Gold, Silver and Platinum Mining. 5.35, Agricultural Talk. 5.55, Time, Weather and Market Prices. 6.5, Talk. 6.25, Gramophone Concert: Toscanini with the New York Philharmonic Orchestra: L'Apprenti Sorcier (Dukas); The Budapest String Quartet: Variations from the Quartet in A, Op. 18 (Beethoven); C. Leisner (Contralto): Aria from Tristan und Isoldo (Wagner); Cortot and the London Symphony Orchestra: Intermezzo from the Pianoforte Concerto in A Minor (Schumann); Heinrich Schlusnus: Two Songs (Schubert): (a) Der zürnende Barde, (b) Am See; Mengelberg and the Concertgebouw Orchestra: Overture, Egmont (Beethoven); Caruso: Vieni sul mar (Tchaikovsky); Fritz Kreisler: Slav Dance in G (Dvorák-Kreisler); F. v. Weingartner conducting the Children's Symphony (Haydn). 7.0, Programme to be announced. 8.15, The Seven Deadly Sins—Three One-Act Plays (Franz Kranewitter). 9.30, Time, Weather, News and Sports Notes.

NAPLES.—See **Rome.**

NOTODDEN.—See **Oslo.**

OSLO

1,083 metres; 60 kW. Relayed by **Fredrikstad, 355.8 metres; Hamar, 574.7 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres;** and **RJUKAN, 447.1 metres.**—**4.0 p.m.,** Concert by the Station Orchestra, conducted by Hugo Kramm: Prelude (Järnefelt); Suppé Potpourri (Morena); Menuet Pompadour (Godard); Melody (Elling); Two Spanish Dances (Moszkowski); Gjactergutt (Grieg); Mazurka (Glinka); Suite from Carmen (Bizet); Waltz, Estudiantina (Waldteufel). 5.0, German Lesson. 5.30, Studio Service. 6.0, Announcements, Weather, and News. 6.30, Recitations. 7.0, Time. 7.1, Agricultural Talk. 7.30, Recital of his own Music by Halfdan Cleve. 8.0, Forecast of Talks for the Month of March. 8.30, Agricultural Notes, Weather, and News. 9.0, Topical Talk. 9.15, Choral Concert, relayed from **Trondheim.** 9.45 (approx.), Close Down.

OSTERSUND.—See **Stockholm.**

PALERMO

542 metres; 3 kW.—**7.0 p.m.,** Announcements, Agricultural Notes, and Giornale Radio. 7.20, Popular Music on Gramophone Records. In an interval at 7.30, Time and Announcements. 7.45, The Tempest—Comedy in Three Acts (Shakespeare), modernised for Radio by Frederico De Maria and Giacomo Armo. After the Comedy, Music from Sound Films. 9.55, News.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW.—Time Signals (**on 2,650 metres**) at 9.26 **a.m.** and 10.26 **p.m.** (Preliminary and 6-dot Signals.)—**5.45 p.m.,** Le Journal Parlé. 7.20, Weather Report. 7.30, Gramophone Concert. Part I: Russian Music: Schcherazade (Rimsky-Korsakov): Death of Boris from Boris Godunov (Mussorgsky); Selection from The Fair at Sorochinsk (Mussorgsky); Little Russian Dance (Mussorgsky). Part II: Viennese Potpourri, Vindobonda (Leopold); Selection from Les cent vierges (Lecocq); Chinese Serenade (Siede); Japanese Lantern Dance (Yoshitomo); Melody (Myne); C'est moi qui fais tout (Gabaroche); Selection from The Arabian Nights (Joh. Strauss); Wiener Burger (Ziehrer); Intermezzo, The Acrobat (Rohrecht); Melody (Lohr); Marche des petits pierrots (Bosc). 9.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—**6.45 p.m.,** Journal Parlé. 7.0, Programme for Children. 7.30, Popular Music on Gramophone Records. 8.0, Agricultural Notes.

MARCH 2nd **THURSDAY** *continued*

8.15, Interval. 8.30, Sponsored Concert. 9.0, Interval. 9.10, Sponsored Concert. 10.10, Dance Music by the Lido Band. 11.0, News.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Gramophone Records: Introduction to The Fair at Sorochinsk (Mussorgsky); Second Suite for Small Orchestra (Stravinsky). 8.0, Press Review and Weather. 12 Noon, Professional Address. 12.30 p.m., Orchestral Concert: Scottish Symphony (Mendelssohn); Gramophone Record: Aria from Don Carlos (Verdi); Serenade (Braga); Gramophone Records: Two Songs (Duparc): (a) Phydilé and (b) La vie antérieure; Ballet Music from Isoline (Messager); Gramophone Records: (a) Les Lilas (Duelle), (b) Song (Howard); Selection from Enlevez-moi (Gabaroche); Gramophone Records: (a) Ma petite Lilloise (Gardoni), (b) Mariquinna (Borel-Clerc); In a Persian Market (Ketelbey); Gramophone Records (Bach and Laverne): (a) Chez le tailleur, (b) Les marins bretons; Hungarian March from The Damnation of Faust (Berlioz). In the intervals at 1.0, Exchange, News and Weather; and at 1.30, Exchange. 2.0, Exchange. 3.45, Exchange and Market Prices. 5.45, Agricultural Talk. 6.0, Religious Address by the Reverend Marc Boegner, relayed from the Reformed Church. 6.30, Market Prices, with Weather, Agriculture Report and Exchange. 7.0, Talk: French Poetry since 1870—Verlaine. 7.20, Orchestral Concert: Sugovi (Ronssel); Ukrainian Suite (Rubinstein); Sérénade à Pierrette (Szulc); Jota (Cools). 7.45, Commercial Prices, News and Review of the German Press. 8.0, Dramatic Programme. Part I, L'Indigent—Play (Vildrac). Part II, Lapointe et Rupiteau—Play (Duhamel). In the intervals at 8.30, News and Weather; at 8.40, Review by Bonnoud, and at 9.15, Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC, KDKA, 306 metres; 25 kW. Relayed by **W8XK** on **48.86 metres** and **25.27 metres.**—9.0 p.m., Work-a-day Thoughts. 9.5, Business News. 9.15, Programme to be announced. 9.30, Weather Report. 9.32, Market Reports. 9.45, Pianoforte Interlude. 9.50, David Lawrence Dispatch. 9.55, KDKA Artist Bulletin. 9.58, Programme announcements. 10.0, Programme to be announced. 10.15 to 11.15, New York Relay. 10.15, The Adventures of Dr. Doolittle. 10.30, The Singing Lady. 10.45, Little Orphan Annie. 11.0, Our Daily Food, by George Rector's Cooking School. 11.15, Time Signal. 11.16, Weather Report. 11.17, Tearberry Sport Review. 11.22, Press News Reeler. 11.27, Strange Facts. 11.29, Temperature Report. 11.30, KDKA Orchestra. 11.45, To-day's News, by Lowell Thomas, from New York. 12 Midnight, Pepsodent Amos 'n' Andy, from New York. 12.15 a.m. (Friday), Programme to be announced. 12.45, The Townshend Murder Mystery. 1.0 to 3.15, New York Relay. 1.0, Cape Diamond Lights. 1.30, Time Signal and Rin Tin Tin Thrillers. 1.45, Thurston the Magician. 2.0, Death Valley Days. 2.30, Len Joy's Dancing Strings. 3.0, Wilfred Glenn (Basso). 3.15, The 1933 Income Tax, by Robert L. Wickline. 3.30, Homay Bailey and Orchestra, from New York. 3.45, Bradley Kincaid, from New York. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.13, KDKA Artist Bulletin. 4.15, Press Last Minute News Flashes. 4.20, Heart Songs by Louise Frayne. 4.30, Smith Ballew and his Orchestra. 5.0, Hotel McAlpin Orchestra, from New York. 5.30, Time Signal and Goodnight.

PORSGRUND.—See **Oslo.**

POZNAN

335 metres; 1.9 kW. Programme also relayed on **31.35 metres** from **7.0 to 8.30 p.m.**—**4.55 p.m.,** Military Report for Young People. 5.5, Educational Talk. 5.20, French Lesson. 5.35, Agricultural Talk. 5.50, Miscellaneous Items and News. 6.10, Agricultural Correspondence. 6.28, Time Signal. 6.30, See **Warsaw.** 7.0, Soloist Concert by Mme. Linda Kamienska (Soprano), Prof. Stanislas Pawlak (Violin), and Prof. Franc. Lukasiewicz (Pianoforte). In the intervals, Theatre Notes and Letter Box, and News from **Warsaw.** 8.30, See **Warsaw.** 9.15, Talk. 9.30 (approx.). Close Down.

PRAGUE

488.6 metres; 120 kW.—**4.10 p.m.,** Talk on Industry. 4.20, Programme for Children: Smetana Concert by the Station Orchestra, conducted by Jeremias and Soloists. 4.50, Gramophone Records of Variety Music. 5.5, Talk for Gardeners. 5.15, Talk for Workers. 5.25, News in German. 5.30, German Transmission: Agricultural Talk. 6.0, Chimes. 6.2, News Bulletin. 6.10, Elementary English Lesson. 6.25, See **Brno.** 6.40, Smetana Song Recital, by Otakar Marak. 7.5, Talk. 7.20, See **Moravská-Ostrava.** 8.0, Time Signal. 8.1, Smetana Concert by the Station Orchestra, conducted by Otakar Jeremias, the Station Chorus, and Theodor Schütz (Tenor): Shakespearean March; Air from Libuša; Cantata for Mixed Choir and Orchestra; Scene from The Brandenburgers in Bohemia; Introduction and Polonaise from The Prague Carnival. 9.0, Time, News and Sports Notes. 9.15, Gramophone Records of Variety Music. 10.0 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; **LAUSANNE, 680 metres;** and **GENEVA, 760 metres.**—6.0 p.m. (from **Geneva**), Weather, News, and Announcements. 6.15 (from **Lausanne**), Answers to Correspondence. 6.30 (from **Geneva**), Theatre Review. 7.0 (from **Geneva**), Concert by the Klein Quartet. 7.40 (from **Geneva**), Readings. 8.0 (from **Geneva**), Weekly Review. 8.10 (from **Geneva**), Variety Concert. 9.0, News and Weather. 9.10 (from **Geneva**), Talk: The Work of the League of Nations. 9.30 (approx.), Close Down.

RIGA

525 metres; 15 kW.—6.15 p.m., Symphony Concert, conducted by J. Melins: Symphony (Mlymarsky); Scene (Kann); Concerto for 'Cello (Boccherini): Suite, Le Printemps (Debussy); Cortège and Dance Air (Debussy). In an interval at 8.0, Weather and News. 8.30, Dance Music. 9.30 (approx.), Close Down.

RJUKAN.—See **Oslo.**

ROME

Call 1RO, 441 metres; 50 kW. Relayed by **Naples, 319 metres,** and **2RO, 25.4 metres.**—7.0 a.m., Gymnastics. 7.15 to 7.30, Giornale Radio and Announcements. 11.30, Weather and Light Music on Gramophone Records. 12 Noon, Time and Announcements. 12.2 p.m., Humorous Talk. 12.5 to 1.15, Concert from **Turin.** In the interval from 12.30 to 12.45, Giornale Radio and Exchange. 3.45 (**Naples**), Children's Radio Review. 4.10, Announcements. 4.15, Exchange and Giornale Radio. 4.30 to 5.15, Orchestral Concert; Soloist, Colonnese (Violin): Overture, The Caliph of Bagdad (Boieldieu); Fourth Suite of Waltzes (Robrecht); Violin Solo, Spanish Dance (Granados-Kreisler); Un sorriso (Barzizza); Selection from La Rondine (Puccini); Marionettes (Sassoli); An den Frühling (Grieg); Sally (di Piramo). 6.10 (**Naples**), Shipping and Sports Notes. 6.15, Agricultural Notes and Dopolavoro Report. 6.20, Giornale Radio. 7.0, Time and Announcements. 7.15, Popular Music on Gramophone Records. 7.30, Sports Notes and Tourist Report. 7.45, Symphony Concert, conducted by Alfredo Casella; Soloist, Vera Gobbi Belcredi (Pianoforte): Suite (Grétry-Mottl); Concerto for Pianoforte and Orchestra (Ravel); Rhapsody, España (Chabrier); Talk on Literature and Art; Suite (Villa Lobos); Pianoforte Solo: Triana (Albéniz); Rhapsody (Mortari); March, Nocturne and Finale from the Serenade for Small Orchestra (Casella); Second Symphonic Suite from La donna serpente (Casella). 9.55, News.

SALZBURG.—See **Vienna.**

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 379.5 metres; 50 kW. Relayed at intervals by **W2XAF** on **31.48 metres;** and by **W2XAD** on **19.56 metres.**—12 Midnight, Mr. Twister, from **New York.** 12.15 a.m. (Friday), Stock Reports. 12.30 to 3.0, **New York** Relay. 12.30, Van and Don. 12.45, The Goldbergs, Comedy Sketch. 1.0, Fleischmann Hour—Rudy Vallee's Orchestra. 2.0, Captain Henry's Show Boat. 3.0, Lucky Strike Hour and Programme Résumé.

SCHWEIZERISCHER LANDESSENDER

BEROMUNSTER, 459 metres; 60 kW.; **BASLE, 244.1 metres;** and **BERNE, 245.9 metres.**—9.20 a.m. (from **Berne**). Broadcast for Schools. 9.50 to 11.28, Interval. 11.28, Time Signal from Neuchâtel Observatory. 11.30, Weather and News. 11.40, Gramophone Guessing Competition: Part I: What Piece is that? Part II: What Instrument is that? 12.35 p.m., Weather and Exchange. 12.45 to 2.30, Interval. 2.30 (from **Zürich**), Programme for Women. 3.0, Concert by the Radio Orchestra. 4.0, Variety Music on Gramophone Records. 4.30, Weather. 4.35 to 5.30, Interval. 5.30 (from **Basle**), Talk: Famous Landscapes: Olympia, Delphi and Delos. 6.0, Time, Weather and Traffic Report. 6.15 (from **Basle**), Elementary Italian Conversation Lesson. 7.0 (from **Basle**), Recital of Old Music for Flute and Harpsichord, by Claire Levy and Joseph Bopp. 7.45, Concert by the Radio Orchestra. 8.0 (from **Basle**), La Veuve Grapin—Comic Opera in One Act (Flotow). 8.45, Weather, News and Popular Concert by the Radio Orchestra. 9.15 (approx.), Close Down.

SOTTENS.—See **Radio-Suisse Romande.**

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by **Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,348 metres; Ostersund, 770 metres;** and **Sundsvall, 542 metres.**—4.5 p.m., Studio Service, relayed from **Uppsala (453.2 metres).** 4.30 (from **Boden**), Sports Notes. 4.45, Popular Music on Gramophone Records. 5.45, English Lesson, relayed from **Jönköping (201.3 metres).** 6.30, Talk on Sweden's Commercial Policy. 7.0, String Quartet in D (Franck), relayed from the Concert Hall. 7.40, Radio Play (Wilhelm Moberg). 8.45, Weather and News. 9.0, Orchestral Concert of Light Music. 10.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert: Mazeppa (Liszt); Concerto in E Minor (Chopin); Les préludes (Liszt); The Moldau (Smetana); Slav Dance (Dvorák). 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Gramophone Concert of Light Music. 2.0, Programme for Children. 3.0 to 4.15, Interval. 4.15, French Elocution Lesson. 4.30, Programme for Children, relayed from **Bordeaux-Lafayette.** 6.0, Historical Talk in French. 6.15, Talk for Women in French. 6.30, Orchestral Concert, conducted by Roskam. Overture, Morning, Noon and Night (Suppé); Waltz, Tout Paris (Waldteufel); Duet, Song without Words (Mendelssohn); Selection from Cavalleria Rusticana (Mascagni); Minuet (Paderewsky); 'Cello Solo: Chantsrusses (Lalo); Waltz, Hydropathen (Gungl); March, Piccadilly (Benoit). 7.30, Time and News. 7.45, Gramophone Concert. Selection from Der Bettelstudent (Millöcker); Selection from Frederica (Lehar); Air from Les cloches de Corneville (Planquette); Song from Miss Decima (Andran); Waltz from The Gipsy Princess (Kálmán); Two Airs from Countess Maritza (Kálmán). 8.20, Lottery Results. 8.30, Orchestral Concert, conducted by Maurice de Villers. Soloist: Max Pagoda (Pianoforte). Night on the Bare Mountain (Mussorgsky); Concerto for Pianoforte and Orchestra (Tchaikovsky); Scandinavian Symphony (Casadesus); Ames d'enfants (Cras); Suite Grecque (Bazelaire); Rhapsody in Blue (Gershwin). 10.30 (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and **FREIBURG, 570 metres.**—11.0 a.m., Concert by the Station Orchestra, conducted by Gustav Görlich. Soloist: Max von Wistinghausen (Baritone). March from Alceste (Gluck); Aria from Radelinde (Handel); March of the Finnish Cavalry; Lansquenet Songs for Solo with Orchestral Accompaniment; Overture, Tancred (Rossini); Aria from The Nuremburg Doll (Adam); Romantic Suite (Bullérian). 12.15 p.m., Time, Weather, News, and Programme Announcements. 12.30, The Haffner Symphony (Mozart). 1.0, Sponsored Programme. 1.30, Spanish Lesson. 2.0, English Lesson. 2.30, Programme from **Frankfurt.** 4.0, See **Munich.** 5.15, Time, Weather, and Agricultural Notes. 5.25, Talk: A Working Day with the Reichswehr. 5.50, Talk on China. 6.15, Time and News. 6.30, Karl Schoenhardt Centenary Programme: Recitations by Theodor Brandt and Songs by Hans Hörlein. 7.0, Transmission for all German Stations relayed from **Berlin (Konigs Wusterhausen).** 8.15, Time, Weather, News and Programme Announcements. 8.25, Heidische Flucht (Heroic Flight)—Radio Play (Robert Walter). 9.35, News. 9.45, See **Frankfurt.** 10.0, Heiliges Leid—a Musical and Literary Fantasia on Friedrich Hölderlin, founded on a Study by Stefan Zweig, Contemporary Documents, and Poems and Letters of Hölderlin, set to Contemporary Music (arr. Wilhelm Locks). 10.30 (approx.), Close Down.

SUNDSVALL.—See **Stockholm.**

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW. 6.0 p.m., News Bulletin. 6.15, Selection from Isoline (Messager), by a Symphony Orchestra. 6.30, Programme for Children. 7.0, Dance Music. 7.15, Racing Results, Market Prices and News. 7.25, Local News. 7.30, Light Music. 7.35, Concert of Viennese Music. 8.15, Accordion Music. 8.30, Operetta Music: Selection from: (a) Frederica (Lehár), (b) Rip van Winkle (Planquette), (c) François les bas bleus (Messager). 8.45, Extracts from Azor—Operetta (Gabaroche), by a Symphony Orchestra. 9.15, Concert: Bedouin March (Oscheit); Amina (Lincke); Suite, No. 2 (Stravinsky); Melody (Kálmán); Kermesse villageoise (Filipucci). 9.45, Variety Concert: Song from Congress Dances (Heymann); Pas sur la bouche (Yvain); Song (Erwin); Violin Solos: (a) Die Biene (Schubert), (b) Czardas (Hubay), (c) Negro Melody and Dance. 10.15, North African News. 10.30, Concert for Listeners in Morocco. Selection from The Secret Marriage (Cimarosa); Song from The Barber of Seville (Rossini); Selection from La Mascotte (Andran); Melody (Lake). 11.0, Musical Programme. 11.30 to 12 midnight, Programme in English by the I.B.C. The I.B.C. Half-hour. Mr. H. K. Hitchcock announcing. Ich liebe dich, my Dear; Bon Voyage; Taboo, Taboo; I don't want to go to Bed; Yes, Mr. Brown; Leave a little for me; If you would learn to live; He's got a Wife and Family at Home; Will you dance through Life with me? 11.57, I.B.C. Good-night Melody. 12 midnight, Weather and Announcements. 12.5 a.m. (Friday), Musical Programme. 12.30 (approx.), Close Down.

TRIESTE

247.7 metres; 10 kW.—4.10 p.m. till Close Down, See **Turin.**

TRONDHEIM.—See **Oslo.**

TURIN

273.7 metres; 7 kW. Relayed by **Milan, 331.5 metres; Genoa, 312.8 metres;** and **Florence, 500.8 metres.**—4.10 p.m., Orchestral Concert: Italian Suite (Bocce); Rugginodora (Tamaja); L'amore dei due Re (Bixio); Abbandono (Mariotti); Selection from Andriana Lecouvreur (Cilea). 5.35, Giornale Radio, Agricultural and Dopolavoro Notes. 6.0, Variety Music on Gramophone Records. In the intervals at 6.20, Giornale Radio, and at 6.30, Time, Announcements and Tourist Report. 7.0, Giornale Radio, Weather and Gramophone Records (contd.). 7.25, Reading from the Twenty-third Canto of the Inferno. 8.0, Rigoletto—Opera in Three Acts (Verdi), relayed from the Scala, **Milan.** In the intervals: Literary Report and Giornale Radio.

VATICAN CITY

19.84 metres (Morning), and **50.26 metres** (Evening); 10 kW.—10.0 to 10.15 a.m., Religious Information in French. 7.0 to 7.15 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by **Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 245.9 metres;** and **Salzburg, 218.5 metres.**—4.5 p.m., Concert of Light Music by the Gustav Macho Orchestra. 5.15, Talk, arranged by the Chamber of Commerce. 5.40, Theatre Notes. 5.50, Talk. 6.20, Recital on Two Pianofortes by Maryan Rawicz and Walter Landauer: Hungarian Rhapsody No. 12 (Liszt); Waltz, Klänge aus Pola (Lehar); Jazz Potpourri (Rawicz-Landauer); Tambourin chinois (Kreisler); Jazz Potpourri (Rawicz-Landauer). 6.50, Time, Weather, and Programme Announcements. 7.5, Eighth Orchestral Concert, arranged by the Gesellschaft der Musikfreund, relayed from the Musikvereinssaal; The Rosé Quartet and the Vienna Philharmonic Orchestra; Conductor: Dr. Adrian Boult: Symphony in G Minor (Mozart); Introduction and Allegro for String Quartet and String Orchestra (Elgar); Ballet Music from The Perfect Fool (Holst); Symphony in E Minor, Op. 98 (Brahms). In an interval at 8.5 (approx.), News, Weather, and Announcements. 9.10, Snow Report. 9.25, Dance Music by the Karl Haupt Band, relayed from the Café Sacher.

WARSAW

1,411 metres; 120 kW.—10.58 a.m., Time Signal and Bugle Call from the Tower of St. Mary's Church, Cracow. 11.5, Programme Announcements. 11.10, Light Music on Gramophone Records. 11.30, Weather Forecast. 11.35, Eighteenth Concert for Schools. The Warsaw Philharmonic Orchestra, conducted by J. Oziminski. Soloists: W. Loziuska (Soprano) and S. Rabcewicz (Pianoforte). Introductory Talk. Overture, Fidelio (Beethoven); Scherzo from Symphony No. 2 (Beethoven); Allegro from Eine kleine Nachtmusik (Mozart); Pianoforte Solos: (a) variations in F minor (Haydn), (b) Ecossaises (Beethoven-Busoni), (c) Marcia alla turca from the Sonata in A (Mozart); Songs: (a) Der Traum (Mozart), (b) Das Veilchen (Mozart), (c) Aria from the Whitsun Cantata (Bach), (d) Aria from The Messiah (Handel); Largo (Handel); Musette (Gluck-Mottl); Air (Bach); Choral and Fugue (Bach-Albert). 1.0 to 2.10 p.m., Interval. 2.10, Announcements. 2.15, Economic Notes. 2.25, Popular Music on Gramophone Records. 2.35, Talk. 2.50, Popular Music (contd.). 3.25, Intermediate French Lesson. 3.40, Talk: The Language of Animals. 4.0, Quintet in A, Op. 114 (Schubert), on Gramophone Records. 4.40, Topical Talk. 4.55, Programme Announcements. 5.0, Talk on Polish Literature: Mickiewicz. 5.20, Topical Talk. 5.25, Light Music from the Cristal Restaurant. 6.0, Miscellaneous Items. 6.20, Agricultural Notes. 6.30, Recitations. 6.45, Radio Journal. 7.0, Concert by the Radio Orchestra, conducted by Oziminski; Soloist, S. Adamska ('Cello); Selection from La Traviata (Verdi); Variations for 'Cello (Boellmann); Ballet Music, The Gardens of Haroun-al-Raschid (Rogowski); 'Cello Solos: (a) Etude, Op. 25, No. 7 (Chopin-Glazunov), (b) Spanish Serenade (Glazunov), (c) Wiegelied (Schubert), (d) Mazurka (Szopwicz), (e) Tarantella (Popper); Hungarian Rhapsody, No. 14 (Liszt). In the interval at 7.45, Sports Notes and Radio Journal. 8.30, Dramatic Programme. 9.15, Light Music and Dance Music from Cracow (312.8 metres). 9.55, Aviation Weather Report and Police Notes. 10.0, Dance Music from the Oaza Dance Hall.

ZAGREB

307 metres; 0.75 kW.—4.0 p.m., Concert of Balalaika Music. 6.5, Educational Notes. 6.25, Popular Science Talk. 6.50, Introduction to the following Relay. 7.5, See **Vienna.** 9.0, News, Weather and Snow Report. 9.10, Orchestral Concert by the Bingo Boys, relayed from the Esplanade Hotel.

ZURICH.—See **Schweizerischer Landessender.**

FRIDAY
MARCH THE THIRD

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL	Light classical concert. The Cinema, by Argus. All-Jewish vaudeville programme. Mr. S. P. B. Mais: "S.O.S. . . ." Choral and orchestral concert.
LONDON REGIONAL	Spanish guitar music. "The Bonnie Earl o' Moray," a play by Edith E. McQueen. Military band programme. "The Joy Ride," by A. J. Alan.
MIDLAND REGIONAL	Light music. A Lieder recital. "Shoes": A talk by Mr. G. W. Hunt, from Leicester. Folk songs and dances, orchestral programme.
NORTH REGIONAL	Orchestral concert. London Regional programme.
WEST REGIONAL	"Famous Waltzes," orchestral concert.
SCOTTISH REGIONAL	Orchestral concert. A band concert. "The Bonnie Earl o' Moray," a play by Edith E. McQueen.
BELFAST	Organ recital. Dance music. Pianoforte recital.

ABROAD

COPENHAGEN	7.10 p.m. Concert from the State Broadcasting Building.
HAMBURG	7 p.m. Opera from Handel to Verdi.
SOTTENS	7.30 p.m. International Concert (relayed also from **Beromunster, Eiffel Tower, Lyons la Doua, Oslo, Prague, Stockholm, Strasbourg, Warsaw, etc.**).
TOULOUSE	8.45 p.m. Beethoven's Seventh Symphony.
TURIN	8 p.m. Symphony concert, conducted by Bernardino Molinari.

ATHLONE

413 metres; 1.2 kW; and **CORK, 224.4 metres. 1.30 to 2.0 p.m.,** Time, Weather Forecast, Stock Report and Light Music on Gramophone Records. **6.0,** Popular Music on Gramophone Records. **6.15,** Programme for Children. **7.0,** Gramophone Records of Variety Music. **7.20,** News. **7.30,** Gardening Talk. **7.45,** Recitations by Peggie Wallace. **8.0,** Concert by the Station Orchestra. **8.30,** Pianoforte Recital by F. C. J. Swanton. **8.45,** Concert (contd.). **9.15,** Song Recital by Mrs. T. Mullen. **9.30,** Violin Solos by Nora Richardson. **9.45,** A Revue presented by Eva Brennan and Company. **10.30,** Time, News, Weather Report and Close Down.

BARCELONA

RADIO-BARCELONA, Call EAJ1, 348.8 metres; 8 kW.—**6.0 p.m.,** Trio Concert. **7.0,** Request Gramophone Records. **7.30,** Exchange Quotations. **8.0,** Light Music on Gramophone Records and News. **9.0,** Chimes from the Cathedral, Weather Forecast, Messages for Seamen, Exchange Quotations and Market Prices. **9.10,** Concert by the Station Orchestra. **9.45,** Harpsichord Recital, by Macario Kastner. **10.15,** Orchestral Concert, relayed from the Café Español. **11.0** (in an interval), News. **12 Midnight** (approx.), Close Down.

BARI

269.8 metres; 20 kW.—**7.0 p.m.,** Agricultural Notes, Tourist Talk and Dopolavoro Announcements. **7.20,** Giornale Radio and Weather Forecast. **7.30,** Time Signal and Announcements. **7.35** (approx.). Concert of Opera Music: Overture, Il finto Stanislao (Verdi); Soprano Solo from La sonnambula (Bellini); Prelude to Loreley (Catalani); Baritone Solo from Ruy Blas (Marchetti); Air from Le villi (Puccini); Soprano Solo: Song from L'amico Fritz; Selection from Il Trovatore (Verdi); Overture, Oberto conte di S. Bonifacio (Verdi); Baritone Solo from Tosca (Puccini); Serenade from I Medici (Leoncavallo); Soprano Solos: Two Songs from Madame Butterfly (Puccini); Baritone Solo from Faust (Gounod); Selection from Anima allegra (Vittadini); Soprano Solo: The Jewel Song from Faust (Gounod). In the interval: Sports Talk. **9.30,** Popular Music on Gramophone Records. **9.55,** News Bulletin.

BASLE.—See **Schweizerischer Landessender.**

BELGRADE

430.4 metres; 2.8 kW.—**6.0 p.m.,** Orchestral Concert of Light Music. **7.0,** Sokol Talk. **7.30,** European Concert, relayed from **Radio-Suisse Romande (Sottens). 9.30,** News Bulletin.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—**12.45 p.m.,** News Bulletin. **1.0,** Gramophone Concert of German Opera Music from **Berlin (Witzleben). 2.0,** Talk for Girls. **2.30,** Weather and Exchange. **2.45,** Letters of a Royal Mother. **3.0,** Educational Talk. **3.30,** See **Leipzig. 4.10,** Talk: The Old Germanic Hero and his Belief in Destiny. **4.30,** Talk: The Old Army as an Educational Factor. **5.0,** Saxophone Quartets: Lyric Suite in Three Movements for Three Saxophones and Pianoforte (Gerhard Pordes); Quartet for Four Saxophones in Five Movements (Hermann Griselle). **5.30,** An Unemployed Worker makes Poems. **5.55,** Weather and Announcements. **6.0,** Talk: Creative Culture. **6.30,** Poetry Reading. **6.45,** Talk by Kurt G. Sell: What they are talking about in America, relayed from **America** (on Gramophone Records). **7.0,** Talk on Winter Relief. **7.5,** Arthur Schnabel Pianoforte Recital, relayed from the Philharmonie: Sonata in A flat, Op. 26 (Beethoven). **7.30,** European Concert from **Radio-Suisse Romande (Sottens). 8.30,** Topical Talk. **9.0,** Weather, News and Sports Notes. **9.45,** Weather Report for Shipping. **10.0,** Light Music from **Berlin (Witzleben). 11.0** (approx.), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—**1.0 p.m.,** Gramophone Concert: Overture, The Merry Wives of Windsor (Nicolai), by the Berlin Opera House Orchestra, conducted by Erich Kleiber; Three Songs from The Merry Wives of Windsor (Nicolai), by Lotte Lehmann (Soprano), Ludwig Hofmann (Bass), and Koloman von Pataky (Tenor); Overture, Der Waffenschmied (Lortzing), by the Berlin Philharmonic Orchestra, conducted by Julius Prüwer; Two Songs from Der Waffenschmied (Lortzing), by Herbert Janssen (Baritone), and Ludwig Hofmann (Bass); Two Songs from The Barber of Bagdad (Cornelius), by Marcel Wittrisch (Tenor) and Björn Talén (Tenor); Overture, The Barber of Bagdad (Cornelius), by the Berlin Philharmonic Orchestra. **1.55,** Berlin Exchange and Market Prices. **2.20,** Talk: Women in Modern Germany. **2.35,** Talk: Josef Rnederer. **3.0,** Musical Programme for Children. **3.30,** See **Leipzig. 4.30,** Talk and Readings: Forgotten Works of Well-known Authors. **5.0,** Musical Handwriting—a Discussion between the Inventor Rudolf Pfenninger and Max Lenz, with Illustrations. **5.30,** Introductory Talk to the Evening Concert. **5.40,** Sports Talk: Fifty Years of German Rowing. **5.55,** The Witzleben Station informs its Listeners. . . . **6.0,** Talk on Herr Göring, Minister of State. **6.10,** Talk: The Worker between the Nation and the World. **6.35,** Mario Heil de Brentani reads from his own Works. **6.45,** Talk: The Intellectual Break-up of the Age. **7.0,** The Watchword. **7.5,** Scenes from William Tell. **8.15,** Beethoven Pianoforte Recital by Artur Schnabel, relayed from the Philharmonie: Sonata in C Minor, Op. 10, No. 1; Sonata in F, Op. 10, No. 2; Sonata in E Flat, Op. 81a. **9.0** (approx.), Talk on Herr Hugenberg, Minister of State. **9.20,** Weather, News and Sports Notes. **9.30** (approx.), Concert by the German Symphony Orchestra, conducted by Manfred Gurlitt: Concert Suite from Idomeneo (Mozart-Busoni); Overture, Hans Heiling (Marschner); Entr'acte from Die drei Pintos (Weber); Gingerbread Waltz from Hansel and Gretel (Humperdinck); Military March (Schubert); Four Preludes from Carmen (Bizet); Overture, Prinz Methusalem (Joh. Strauss); Perpetuum mobile (Joh. Strauss); Dorfschwalben aus Oesterreich (Jos. Strauss). In the interval, Report on the Berlin Six Days' Racing. **11.0** (approx.), Close Down.

BERNE.—See **Schweizerischer Landessender.**

BEROMUNSTER. — See **Schweizerischer Landessender.**

BODEN.—See **Stockholm.**

BODO.—See **Oslo.**

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—**7.20 p.m.,** News Bulletin. **7.30,** Light Music on Gramophone Records. **7.45,** Lottery Results. **7.50,** News and Weather Forecast. **8.0,** European Concert, relayed from **Radio-Suisse Romande (Sottens). 10.0,** Programme relayed from **Toulouse (PTT) (255 metres).**

BRATISLAVA

279 metres; 14 kW.—**5.20 p.m.,** Song Recital by Z. Napravilova. **5.45,** Slovak Spelling Lesson. **6.0,** See **Prague. 7.30,** European Concert, relayed from **Radio-Suisse Romande (Sottens). 9.30,** See **Prague. 9.45** (approx.), Close Down.

BREMEN.—See **Hamburg.**

BRESLAU

325 metres; 1.5 kW.; and **GLEIWITZ, 253 metres.**—**12.10 p.m.,** Gramophone Concert. Old Bavarian Grenadiers' March; Post-Horn Duet, A Hand voll Stoana; Mein Teddybär (Gangiberger); Behüt' dich Gott, from Der Trompeter von Säckingen (Nessler); Finale from the Flute Concerto in C (Mozart); Finale from the Quintet for Flute, Oboe, Clarinet, Bassoon and Horn (Lendvai); Klarinetten-Ländler (Lustiger); Japanese Melody (Yoshitomo); Slow Foxtrot, Blutrote Rosen (Hünnemeyer); Parade March. **12.45,** Time, Weather, News and Exchange. **1.5,** Dance Music on Gramophone Records. **1.45,** Sponsored Programme, with Gramophone Records. **2.10,** Agricultural Prices. **2.40,** Talk for Young People. **3.10,** Concert by the Station Orchestra, conducted by Franz Marszalek. Slav March (Tchaikovsky); Selection from Die toten Augen (d'Albert); Waltz, Hofballtänge (Lanner); Gavotte antique (Wolff); Selection from Die Fledermaus (Joh. Strauss); Waltz, España (Waldteufel); Overture, La belle Hélène (Offenbach). **4.45,** Agricultural Prices. **4.50,** Evangelical Sermons, with Introductory Talk. **6.15,** Heinz Steguweit reads from his own Works. **5.45,** Programme to be announced. **6.15,** Weather for Farmers. **6.20,** Catholic Sermons, with Introductory Talk. **6.45,** Talk by Kurt G. Sell: What People are Talking about in America, relayed from **America. 7.0,** Idomeneo—Opera in Three Acts (Mozart)—Concert Version. **8.0,** Announcements. **8.10,** First Symphony in C Minor, Op. 68 (Brahms), by the Silesian Philharmonic Orchestra. **9.10,** Time, Weather, News, Sports Notes and Programme Announcements. **9.25,** Talk: Inventors before and after they have obtained Recognition. **9.40,** Dance Music and Light Music by the Station Orchestra, conducted by Franz Marszalek. Soloist: Paul Richter (Baritone). **11.0** (approx.), Close Down.

BRNO

342 metres; 35 kW.—**3.10 p.m.,** Concert by the Station Orchestra, conducted by Jan Janota. **3.55,** Theatre Review. **4.5,** See **Prague. 5.5,** Talk: Creative Art. **5.15,** Talk for Workers. **5.25,** German Transmission: News, Sports Notes, Gardening Talk and Talk on the German Language. **6.0,** See **Prague. 6.25,** The Stolen Document—Detective Play in One Act (Rypar and Melichar). **6.55,** See **Prague. 7.30,** See **Radio-Suisse Romande (Sottens). 9.30,** See **Prague. 9.45** (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—**12 Noon,** Selection from Manon Lescaut (Puccini), on Gramophone Records. **1.0 p.m.,** Le Journal Parlé. **1.10,** Concert by the Small Station Orchestra, conducted by P. Leemans: Overture, Le Nouveau Seigneur de village (Boieldieu); Selection from Lakmé (Delibes); 'Cello Solo; Gavotte (Popper); Feuilles d'album (d'Ambrosio); Pianoforte Solo: Waltz (Chopin); Two Dances (Dvorak); Melody (Rubinstein); Italian Melodies (Löhr). **2.0,** Educational Programme. **5.0,** Concert by the Symphony Orchestra, conducted by A. Meulemans: Symphonie légendaire (Godard); Frühlingslied (Wagner); The Prize Song from The Mastersingers (Wagner); Ukranian Pictures (Akimenko); Valse triste (Sibelius); Valse des fleurs (Tchaikovsky). **6.0,** Talk. **6.15,** Gramophone Records: Song from La Traviata (Verdi); 'Cello Solo: Moment musical (Schubert); Selection from The Gipsy Princess (Kálmán); Selection from Piccolino (Guiraud); Overture, Lakmé (Delibes); Londonderry Air (Kreisler); Souvenir des bois d'Avron-la-Chateauvert; Waltz, Quand l'amour meurt (Crémieux); Song from Werther (Massenet). **6.45,** Haydn Pianoforte Recital by Oscar Delvigne: Arietta, with Variations in E Flat; Sonata No. 7 in D; Theme with Variations in C. **7.15,** Talk on Public Opinion. **7.30,** Literary Review and Talk on Cattle Rearing. **8.0,** Concert by the Symphony Orchestra, conducted by A. Meulemans. Soloist: M. Lespagnard (Baritone); Overture, Die Fledermaus (Joh. Strauss); Selection from Les Erynnies (Massenet); Songs: (a) Song from L'Africaine (Meyerbeer), (b), Aubade (Crotto), (c) Walloon Songs (Crotto); Selection from Les Deux Pigeons (Messager). **8.45,** Talk on Music. **9.0,** Concert (contd.). Soloist: Mme. Zinna Maso (Songs); Overture, Ali Baba (Cherubini); Esquisses symphoniques (De Taye); Songs: (a) Song from Samson and Delilah (Saint-Saëns), (b) Après un rêve (Fauré), (c) Serenade (Brahms); Une fête à Aranjuez (Demersseman); Divertissement (Lalo). **10.0,** Le Journal Parlé. **10.10,** Introduction and Allegro for Harp (Ravel). **10.25,** Scheherazade (Rimsky-Korsakov), on Gramophone Records.

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW.—Programme in Flemish.—**12 Noon,** Concert by the Small Station Orchestra, conducted by P. Leemans: Le carillonneur (Gauwin); La pendola armoniosa (Pick-Mangiagalli); Campane a sera (Billi); The Clock and the Dresden Figures (Ketelbey); Selection from Les Cloches de Corneville (Planquette); Pianoforte Solo: Prelude in E (Rachmaninov); Melody (Mueller-Melbeau); Carillon (Elgar); Rubens-marsch (Benoit). **1.0 p.m.,** Le Journal Parlé. **1.10,** Light Music on Gramophone Records. **2.0,** Educational Programme. **5.0,** Concert by Mickey's Club Jazz Attraction. **6.15,** Talk: Little People in a Large Town—Brussels. **6.30,** Scandinavian Music by the Small Station Orchestra, conducted by P. Leemans: Finlandia (Sibelius); Symphonic Dances (Grieg); Rustle of Spring (Sinding); Romance for Violin (Svendsen). **6.45,** Economic Notes. **7.30,** European Concert, relayed from **Radio Suisse Romande. 9.30,** Recitations. **9.45,** Gramophone Records: Foxtrot, Phonomanie (Avignon); Tango, Night in Cairo (Gilbert); Rumba, Mama Inez (Gilbert); Waltz, Beautiful Ohio (Earl); African Lament. **10.0,** Le Journal Parlé. **10.10,** A Sketch (Renaat Grassin), with Music by the Radio Orchestra, conducted by Charles Walpot.

BUCHAREST

394 metres; 12 kW.—**4.0 p.m.,** Concert by the Station Orchestra: March (Blankenburg); Waltz (Jessel); Overture (de Taye); Humperdinck Potpourri (Fetras); Selection from Lulu (Parès-van Parys). **5.0,** News and Time Signal. **5.10,** Talk. **5.25,** Concert (contd.): Pastorale (Dransmann); Cockney Suite (Ketelbey). **6.0,** Talk on Romania: Her Salt Mines. **6.40,** Light Music on Gramophone Records. **7.0,** Time Signal. **7.1,** Symphony Concert by the Philharmonic Orchestra, conducted by George Georgescu. **9.0,** News.

BUDAPEST

550 metres; 18.5 kW. Also relayed on **840 metres** from **7 p.m.** till Close Down.—**4.0 p.m.,** Cigány Music by the Simi Kurina Band. **4.50,** Shorthand Lesson. **5.10,** Liszt Concert, with Introductory Talk: Soloists: Alexander Sved (Songs) and E. Hegyi (Pianoforte). Symphonic Poem. Les Préludes; Songs; Hungarian Fantasia for Pianoforte and Orchestra. **6.30,** Talk. **7.0,** Interval. **7.30,** European Concert, relayed from **Radio-Suisse Romande. 9.0,** Announcements, followed by Cigány Music by the Gyula Karolyi Band, relayed from the Café Spolarich. **10.0,** Talk in Italian.

CASSEL.—See **Frankfurt.**

COPENHAGEN

281 metres; 0.75 kW.; and **KALUNDBORG, 1,153 metres;** 7.5 kW.—**11.0 a.m.,** Time Signal and Chimes from the Town Hall. **11.2,** Concert by the Harald Andersen String Ensemble, relayed from the Bellevue Strandhotel. **12.15 p.m.,** Talk for Schools on Music. **12.45 to 2.0,** Interval. **2.0,** Talk: Adventures on the High Road. **2.20,** Orchestral Concert, conducted by Teddy Petersen, relayed from the Wivex Restaurant. **4.0,** Programme for Children. **4.40,** Exchange and Fish Market Prices. **4.50,** Talk: Experiences of a Comic Artist. **5.20,** German Lesson. **5.50,** Weather. **6.0,** News. **6.15,** Time. **6.30,** Talk: The Development of National Laws. **7.0,** Time Signal from the Town Hall. **7.1,** Programme by Per Knutzon. **7.10,** Concert by the Radio Symphony Orchestra, relayed from the State Broadcasting Building. Conductor: Fritz Busch. Soloist: Helge Roswaenge (Songs). Symphony No. 2 in D, Op. 73 (Brahms); Aria from Così fan tutte (Mozart); Aria from Idomeneo (Mozart); Ten Minutes' Interval; Aria from Oberon (Weber); Variations and Fugue on a Theme by Mozart (Reger). **9.15,** News. **9.30,** Reading. **9.50,** Dance Music by the Otto Lington Band, relayed from the Ritz Restaurant. In an interval at **11.0,** Time Signal and Chimes from the Town Hall. **11.30** (approx.), Close Down.

CORK.—See **Athlone.**

CRACOW

312.8 metres; 10 kW.—**6.0 p.m.,** Miscellaneous Items and Announcements. **6.15,** Talk on Curiosities. **6.30,** See **Warsaw. 7.30,** Euro-

pean Concert, relayed from **Radio Suisse Romande (Sottens).** 9.55, See **Warsaw.** 10.15 (approx.). Close Down.

DANZIG.—See **Heilsberg.**

DRESDEN.—See **Leipzig.**

FECAMP

225.9 metres; 10 kW.—**12 Noon,** Variety Music on Gramophone Records. **12.30 p.m.,** News. **12.45,** Songs. **6.0 to 7.0,** Programme in English by the I.B.C. Announcers: C. Danvers Walker, R. Chene, M. McNabb, and W. Croiton. **6.0,** Concert for Torquay Listeners: Tiger Rag; Hot and Anxious; You Rascal you; Sweet Sue; How'm I doin'? Clerinet Marmalade; Try getting a Good Night's Sleep; I got Rhythm. **6.30,** Organ Recital for Weymouth Listeners; Home (Steeden); On Wings of Song (Mendelssohn); Trees (Kilmer); Roses of Picardy (Haydn Wood); Less than the Dust (Woodforde-Finden); Temple Bells (Woodforde-Finden); There's Nothing new in Love (Maclean); The Butterfly Waltz (Ralton). **7.0,** News and Light Music on Gramophone Records. **7.30,** Radio Gazette. **8.0.** Answers to Correspondents. **8.15,** Agricultural Notes. **8.30,** Concert, relayed from **Havre.** **10.0** till Close Down. Programme in English by the I.B.C. **10.0,** Laughing at Life; Building a Home for you; A little Love Song; Out of Nowhere; Hello beautiful; Just a Gigolo; Poor Kid; Mood Indigo; When I take my Sugar to Tea; You're the one I care for; Laughing at the Rain; Lady play your Mandoline; Mad about you; The Peanut Vendor; Two little, blue little Eyes; Farewell Blues. **11.0,** Song Recital: Boots (McCall); The Song of the Flea (Mussorgsky); The Smuggler's Song (Mortimer); Vulcan's Song (Gounod); The Gay Highway (Drummond); The Admiral's Broom (Bevan); The Yeoman's Wedding (Poniatowsky); In Cellar cool (Traditional). **11.30,** Orchestral Concert: The Bumble Bee's Wedding. (Clare); Selection from Die Fledermaus (Joh. Strauss); Columbine (Garland); Bells across the Meadow (Ketelbey); Waldteufel Memories (Arr. Finck); Devotion (Ketelbey). **12 Midnight,** Songs: Exactly like you (Fields); I do like to do Things for you (Yellen); More than you know (Youmans); Cracker Jack; My Lover (Yellen); Swingin' in a Hammock (Seymour); On the Sunny Side of the Street; Flappertte (Greer). **12.30 a.m. (Saturday),** Organ Recital: For the Sake of the Days gone by (Wallace); A Perfect Day (Jacobs-Bond); Who am I? (Clifford); Love's Old Sweet Song (Molloy); If you were the only Girl in the World; Potpourri of Song Hits. **1.0,** Variety Programme: Sing Holly, go whistle, hey hey; Call me Darling; Topsy Turvey Talk; Marta; Bed; My Hiking Girl; The Scotch Italian Christening; Round the Marble Arch. **1.30,** Hawaiian Duets; Hawaiian Waltzes; Almia Mia (Whidden); Sing Something Simple; Good Night, Sweetheart (Noble); Bone Festa (Traditional); Three little Words (Check); O sole mio (di Capua); Hawaiian Medley. **2.0,** You, just you; There's another Trumpet playing in the Sky; Don't say goodbye; And then we'll have some more; Bravo Jim; In a Shanty in old Shanty Town; When the Band goes marching by; We just couldn't say Goodbye; Yes, Mr. Brown; Silver Hair and Heart of Gold; Take a Spot of Happiness; Song of the Bells; Where is this Lady?; Goodbye Blues; Tell me To-night; Same old Moon. **2.57,** I.B.C. Good-Night Melody. **3.0,** Close Down.

FLENSBURG.—See **Hamburg.**

FLORENCE.—See **Turin.**

FRANKFURT

259 metres; 17 kW; and **CASSEL, 245.9 metres;** and **TRIER, 259.3 metres;** 2 kW.—**6.20 p.m.,** Walter Bhem talks about his Biography of President Hindenburg. **6.30 to 7.30,** See **Stuttgart.** **7.30,** European Concert, relayed from **Radio Suisse Romande (Sottens).** **9.30,** Time, News, Weather and Sports Report. **9.55** till Close Down. See **Stuttgart.** **11.0** (approx.), Close Down.

FREDRIKSSTAD.—See **Oslo.**

FREIBURG.—See **Stuttgart.**

GENEVA.—See **Radio-Suisse Romande.**

GENOA.—See **Turin.**

GLEIWITZ.—See **Breslau.**

GOTEBORG.—See **Stockholm.**

GRAZ.—See **Vienna.**

HAMAR.—See **Oslo.**

HAMBURG

Call ha (in Morse), 372 metres; 1.5 kW. Relayed by **Bremen, 269.8 metres; Flensburg, 227.4 metres; Hanover, 566 metres,** and **Kiel, 232.2 metres.**—**5.5 p.m.,** Variety Programme. **5.50,** Frankfurt Exchange and Hamburg Market Prices. **6.0** (from **Kiel**). Talk: The Working Woman. **6.25,** Weather Report. **6.30,** Eugen d'Albert Memorial Concert (died March 3, 1932). The Station Orchestra, conducted by José Eibenschütz. Soloist: Otto Rebbert (Pianoforte). Overture. Der Improvisator; Pianoforte Concerto No. 2, Op. 12. **7.0,** Opera Music from Handel to Verdi. II; Haydn—Marschner—Cherubini—Rossini; The Hamburg Philharmonic Orchestra, conducted by Adolf Seeker. Soloists: Hans Tessmer, Erna Kroll-Lange, Gertrud Schnitzer, Herbert Ernst Groh, and Bernhard Jakschtat. **8.0,** News Bulletin. **8.10,** Psalm der Befreiung, Op. 75 (Lendrai), for Male Voice Choir, Soprano and Orchestra, relayed from the Nicolaikirche, Rostock. **9.10,** Time and News. **9.20,** Talk: What People are talking about in America. **9.35,** Gramophone Concert: Overture, Der Opernball (Heuberger); Rondo of the Golden Calf and Mephistopheles' Serenade from Faust (Gounod); Zigeunerweisen (Sarasate); Selection from The Huguenots (Meyerbeer); Air from The Barber of Bagdad (Cornelius); Church Scene from Die spanische Nachtigall (Fall); Waltz, Nachtschwärmer (Zichrer); Hungarian Rhapsody (Popper); From the Old and the New World (Leopold); Serenade from The Goldsmith of Toledo (Offenbach); Gondola Song from Eine Nacht in Venedig (Joh. Strauss); Wunschprogramm 1931 (Mohr); Rheinländer Potpourri No. 2 (Kermbach); Einfach fabelhaft (Dostal). In the interval at **10.20,** Ice Report.

HANOVER.—See **Hamburg.**

HEILSBERG

276.5 metres; 60 kW.; and **DANZIG, 453.2 metres.**—**12.5 p.m.,** Gramophone Concert: In the interval at **12.20 p.m.,** News. **1.30,** Sponsored Programme with Gramophone Records. **2.0,** Agricultural Prices and Exchange Rates. **2.30,** Programme for Children. **3.0,** Talk for Women: The Use of Herbs in Medicine and Cooking. **3.30,** Concert by the Small Station Orchestra, conducted by Eugen Wilcken. Overture, Semiramis (Rossini); Waltz, Wine, Woman and Song (Joh. Strauss); Saint d'amour (Elgar); Rusticanella (Cortopassi); Potpourri, Fortissimo (Feigl); Romance (Rubinstein); Florentine Serenade (Franchetti); Suite, On the Banks of the Nile (Platen). **4.45,** Talk on Agricultural Workers. **5.15,** Agricultural Prices. **5.20,** Ice Report. **5.30,** English Folk Music on Gramophone Records, with Introductory Talk and Commentary. **6.15,** Talk on Johann Georg Hamann. **6.45,** Talk by Kurt G. Sell: What People are talking about in America, relayed from America. **7.0,** Weather and News. **7.5,** A Discussion on the following Transmission: How to Listen to Orchestral Music. **7.50** (approx.), Fourth Symphony in E Flat—The Romantic (Bruckner), by the Königsberg Opera House Orchestra, conducted by Erich Seidler. **8.35** (from **Danzig**). Contemporary Problems in Modern Literature. (IV) School and Life—a Literary Sequence (Heinz Kindermann). **9.30,** News, Sports Notes and Weather.

HILVERSUM

Announced **HUIZEN, 296.1 metres;** 20 kW. (7 kW. up to **4.40 p.m.**).—Programme of the Christian Radio Society (N.C.R.V.). **10.40 a.m.,** Trio Concert. **11.40,** Police Notes. **11.55,** Song Recital by Johann Meyer (Baritone). **12.40 p.m.,** Trio Concert (contd.). **1.40,** Programme to be announced. **2.10,** Reading. **2.30,** Talk for the Housewife. **3.10,** Concert by the Dutch Harp Quartet: Meditation on the Sixth Prelude (Bach); Air from Orpheus (Gluck); Sonata in C Minor in Old Style, for Violin and Pianoforte; Prelude and Fugue in C Minor for Organ (Bach); Harp Solos: (a) Air, (b) Chaconne (Handel); Promenade and Nocturne for 'Cello and Harp (Marcel Tournier); Songs; Pieces for Violin and Harp (Kreisler): (a) Old Folks at Home, (b) Aloha Oe; Adagio (Fesca); Interlude (Berghout); Elégie for 'Cello and Harp (Massenet); Organ Solo: Redemption (Bossi). **4.40,** Talk for Young Stamp Collectors. **5.10,** Talk for the Young Amateur Photographer. **5.40,** Agricultural Talk. **6.10,** Talk. **6.40,** Literary Talk. **7.10,** Police Notes. **7.25,** Talk: The Wagner Year 1933. **7.40,** Concert by the Arnhem Orchestral Society, conducted by Jaap Spaanderman. Soloist: Andries de Swarte (Cello). Suite in D (Bach); Symphony in G Minor (Mozart). **8.40,** Talk. **9.10,** Concert (contd.): 'Cello Concerto (d'Albert); Peer Gynt Suite, No. 1 (Grieg). **9.40** (in an interval), News. **10.10,** Gramophone Concert of Sacred Music. **11.10** (approx.), Close Down.

HORBY.—See **Steckholm.**

HUIZEN

Announced **HILVERSUM, 1,875 metres;** 8.5 kW.—**11.40 a.m. to 4.40 p.m.,** Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.). **11.30,** Time Signal. **11.41,** Concert by the Wireless Orchestra, conducted by Nico Treep. Gramophone Records in the intervals. **1.40,** Talk. **2.10,** Concert by the Chamber Orchestra, conducted by Nico Gerharz, with Gramophone Interludes. **3.40 to 7.40,** Programme of the Workers' Radio Society (V.A.R.A.). **3.40,** Concert by the Little V.A.R.A. Orchestra, conducted by P. Duchant. **4.30,** Programme for Children. **5.10,** Concert (contd.). **5.40,** Variety Music on Gramophone Records. **5.55,** Organ Recital by Johan Jong: Radetzky March (Joh. Strauss); Du sollst der Kaiser meiner Seele sein (Stolz); Selection from The Merry Wives of Windsor (Nicolai); Einfach fabelhaft (Dostal). **6.20,** Talk on Russia. **6.40,** Concert by the Little V.A.R.A. Orchestra, conducted by Duchant: Hoppla, jetzt komm ich (Heymann); Valse des Poupées (Andran); Gavotte (Billet); Liebesschmerz (Friedemann); Du bist das süszeste Mädel der Welt (Heymann); Reich mir dein weiszes Händchen (Benatzky); Stenka Razin (Kubat); Selection from The Mikado (Sullivan); Das ist die Liebe der Matrosen (Heymann); Selection from The Desert Song (Romberg). **7.40 to 10.40,** Programme of the Liberal Protestant Radio Society (V.P.R.O.). **7.40,** Bible Reading. **8.10,** Vocal and Instrumental Concert: To v.d. Sluys (Soprano), Annie Wond (Contralto) and M. F. de Nobel (Pianoforte). Beato in ver che pno (Handel); Pièce (Schubert); Lachen und weinen (Schubert); Geheimes (Schubert); Auf dem See (Schubert); Moments musicals, Op. 94, Nos. 2 and 3 (Schubert); La vierge à la crèche (Franck); Aux petits enfants (Franck); Les danses de Lormont (Franck). **8.40,** Talk on Industry. **9.10,** Concert, Part II: Brahms Programme: Song; Unbewegte blaue Luft; Wenn du nur zuweilen lächelst; Von Waldbekränzter Höhe; Interlude, Op. 118, No. 2; Ballad, Op. 118, No. 3; Hüt du dich; Klosterfräulein; Am Strande; Die Schwestern. **9.40,** Religious News. **9.45,** News Bulletin. **9.55,** Address by the Reverend J. L. de Wolf. **10.25,** Popular Music on Gramophone Records. **10.40,** V.A.R.A. Programme: Variety Music on Gramophone Records. **11.40** (approx.), Close Down.

INNSBRUCK.—See **Vienna.**

KALUNDBORG.—See **Copenhagen.**

KIEL.—See **Hamburg.**

KLAGENFURT.—See **Vienna.**

KOSICE.—See **Prague.**

LAHTI

1,796 metres, 40 kW., and **HELSINKI, 368.1 metres.**—**5.15 p.m.,** Dramatic Programme. **5.35,** Talk. **6.0** (from **Helsinki**). Concert by the Station Orchestra, conducted by Erkki Linko. Soloist: Gustaf Svensson (Xylophone): Overture, La Preciosa (Weber); Music for Children (Blech); Xylophone Solo: Roudino (Sibelius); Selection from Tiefland (d'Albert). **7.0,** Dialogues. **7.25** (from **Helsinki**). Popular Music on Gramophone Records. **7.45,** News in Finnish. **8.0,** News in Swedish. **9.0.** Part-Relay of the European Concert from **Radio Suisse Romande (Sottens).**

LANGENBERG

473 metres; 60 kW.—**12 Noon,** Concert, conducted by Wolf. Soloist: Grete Müsse (Contralto). In the interval at **1.0 p.m.,** News. **1.30,** Sponsored Programme with Gramophone Records. **2.30,** Economic Notes and Time. **2.50,** Programme for Children. **4.0,** Concert by the Station Chamber Orchestra, conducted by Spitz. Soloists: Klära Hansen, Marita Gründgens (Soprano), Leonardo Araniesco (Tenor), Hans Wocke (Baritone), and Wilhelm Strienz (Bass). **5.20,** English Lesson. **5.45,** Weather, Time, Economic Notes and Sports Results. **5.55,** The World on Gramophone Records: The Nomadic Shepherds of Epirus. **6.20,** Talk on Taxation. **6.40,** News. **6.45,** Talk by Kurt G. Sell: What People are talking about in America, relayed from America. **7.0,** The Duchess of Chicago—Operetta in Two Acts (Kálmán). **9.15,** News and Sports Notes. **9.35,** Report on the Riding and Driving Tournament from the Westphalian Hall, Dortmund. **10.0,** Concert, conducted by Wolf. **11.0** (approx.), Close Down.

LAUSANNE.—See **Radio-Suisse Romande.**

LEIPZIG

389.6 metres; 120 kW.; and **DRESDEN, 319 metres.**—**11.0 a.m.,** Orchestral Concert. In the interval at **12 Noon,** News, Weather, Snow Report and Time. After the Concert, Exchange Quotations. **1.0 p.m.,** Art Report. **1.30,** Hermann Noll reads from his own Works. **2.15,** Talk for the Country Woman: The Use of Goat's Milk in the Household. **2.35,** Economic Notes. **3.0 to 3.15,** Astronomical Talk. **3.30,** Concert by the Leipzig Symphony Orchestra, conducted by Theodor Blumer. Soloist: Gessler (Pianoforte). Symphonic Prelude, Penthesilea (Draeseke); Capriccio in B Minor, Op. 22, for Pianoforte and Orchestra (Mendelssohn); Elegy and Waltz from the Serenade for Strings (Tchaikovsky); Waltz, Hofballtänze (Lanner). **4.30 to 4.35,** Weather and Time. **4.50,** Economic Notes. **5.0,** Book Review. **5.25,** English Lesson. **5.50,** Programme to be Announced. **6.0,** In a Spirit of Confidence—an Optimistic Sequence (Gert Randolf), with Extracts from Mörike, Goethe, Storm, Kleist, Carossa, Seuffaf, and others. **6.45,** Talk: What People are talking about in America, relayed from **America.** **7.0,** Talk on Graphology. **7.30,** European Concert, relayed from **Radio-Suisse Romande.** **9.30,** News. **9.40** (approx.), Instrumental Concert. Introductory Talk by Dr. Wilhelm Hitzig. Two Chamber Trios for Two Violins and Harpsichord (Nernda); Six Dances for Pianoforte; Der eheliche Zwist for Pianoforte, Two Violins, Viola and Double Bass (Vogler); German Dances for Pianoforte, Terpsichore (Breitkopf); Quintet for Flute, Violin, Two Violas and 'Cello (Mozart); Trio, Op. 9, for Pianoforte, Violin and 'Cello (de Sayve). **11.0** (approx.), Close Down.

LINZ.—See **Vienna.**

LWOW

381 metres; 16 kW.—**6.0 p.m.,** Literary Talk. **6.15,** Miscellaneous Items. **6.30** till Close Down, See **Warsaw.** **10.0** (approx.), Close Down.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—**7.30 p.m.,** European Concert, relayed from **Radio-Suisse Romande (Sotten).** After the Relay, Programme from **Paris (Ecole Supérieure) (447.1 metres),** and News Bulletin. **11.0** (approx.), Close Down.

MADRID

ARANJUEZ, EAQ, 30.43 metres; 20 kW.—**10.30 p.m.,** Popular Music. **10.45,** Radio Chronicle. **11.0,** Popular Music (contd.). **11.35,** Answers to Correspondence. **11.40,** Spanish-American Talk. **11.45,** Light Music. **12 Midnight** (approx.). Close Down.

MADRID

UNION RADIO, Call EAJ7, 424.3 metres; 2 kW.—**7.0 p.m.,** Chimes, Exchange, Programme of Musical Novelties and Talk: Anti-tubercular Vaccination; followed by interlude by Ramon Gomez de la Serna. **8.15,** News and Political Review. **8.30 to 9.30,** Interval. **9.30,** Chimes, Time, Political Review and Humorous Talk. **10.0** (approx.). Concert by the Symphony Orchestra, conducted by Salvador Bacarisse: Overture, Der Freischütz (Weber); Pastorale d'été (Honegger); Two Nocturnes (Debussy): (a) Images, (b) Fêtes; Symphony in C—the Jupiter (Mozart); Ballet Suite, Corrida de feria (Bacarisse). **11.45,** News Bulletin and Programme Announcements for Listeners Abroad. **12 Midnight,** Chimes and Close Down.

MALMO.—See **Stockholm.**

MILAN.—See **Turin.**

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—**6.25 p.m.,** A Comedy in One Act. **6.55,** See **Prague.** **7.30,** See **Radio Suisse Romande (Sotten).** **9.30,** See **Prague.** **9.45** (approx.). Close Down.

MOSCOW

TRADE3 UNION, 1,304 metres; 100 kW.—**4.30 p.m.,** Reading from the Works of Flaubert. **5.30,** Concert from the Radio Theatre. **8.0,** Talk in English: Review of the Week and Answers to Correspondents.

MOTALA.—See **Stockholm.**

MUHLACKER.—See **Stuttgart.**

MUNICH

533 metres; 1.5 kW. Relayed by **Augsburg,** and **Kaiserslautern, 560 metres,** and **Nürnberg, 239 metres.**—**4.0 p.m.,** Concert, conducted by Erich Kloss. Overture, Giralda (Adam); Clog Dance from Czar and Carpenter (Lortzing); Suite, Dances of the Nations (Manfred); Slav Rhapsody No. 2 (Friedemann); Song and Czardas from Mariska Lehár); Suite, In a Fairy Realm (Ketelbey); March, Feuert los! (Holzmann). **5.15,** Talk: Germany's Petroleum Treasures. **5.35,** Talk: German Ideas of Government the House of Hohenstaufen. **5.55,** Time, Weather, Market Prices and Snow Report. **6.5,** Talk: Art and Advertising. **6.25,** Morning, Noon and Night—Concert by the Small Station Orchestra, conducted by Erich Kloss. Soloists: Margarethe Burckhardt-Rohr (Soprano), Adolf Lussmann (Tenor), Hugo Reker (Violin), and Herbert Frantz (Recitations). Morgenstimmung; Des Morgens wohl vor Tag; Frühmorgens, wenn die Hähne krähn; Flussreise; Abseits; Hymne an die Sonne; Mittag in der Grosszstadt; Spielende Kinder; Autobus 22; Traum durch die Dämmerung; Der Mondaufgang; Monschein; Nacht. **7.40,** Short Stories about Actors, Singers and Famous Conductors. **8.0,** Symphony Concert by the Station Orchestra, conducted by Hans Winter, with the Station Choir. Symphony No. 5 in C Minor (Beethoven); Psalmus hungaricus for Tenor, Choir and Orchestra (Kodaly). **9.20,** Time, Weather, News, Sports Notes and Snow Report. **9.50,** Talk by Kurt G. Sell: What People are talking about in America, relayed from **America.**

NAPLES.—See **Rome.**

NOTODDEN.—See **Oslo.**

OSLO

1,083 metres; 60 kW. Relayed by **Fredrikstad, 365.8 metres; Hamar, 574.7 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres;** and **Rjukan, 447.1 metres.**—**4.0 p.m.,** Soprano Song Recital by Ragnhild Kjelstrup: Un grand sommeil noir (Laparra); Il neige (Bemberg); To a Violet (Brahms); Serenade (Brahms); Das Mädchen spricht (Brahms);

Aria (Purcell); The Cuckoo (Lehmann); Dulgt kjerlighet (Kjerulf); Zur Rosenzeit (Grieg); Im Kahne (Grieg). **4.30,** Discussion between a Schoolmaster and his Pupil Ten Years Ago. **5.0,** English Lesson. **5.30,** Violin and Accordion Recital by Per Bolstad, Sen., and Alfred Wergeland, relayed from **Bergen (364 metres).** **6.0,** Announcements, Weather, and News. **6.30,** French Lesson. **7.0,** Time. **7.1,** Symphony Concert by the Philharmonic Orchestra, conducted by Odd Grimner Hegge. **8.30,** Weather and News. **8.45,** Part Relay of the European Concert from **Radio-Suisse Romande.** **9.30,** Topical Talk. **9.45** (approx.), Close Down.

OSTERSUND.—See **Stockholm.**

PALERMO

542 metres; 3 kW.—**7.0 p.m.,** Dopolavoro Notes, Tourist Report, Agricultural Notes, Report of the Royal Geographical Society and Giornale Radio. **7.20,** Popular Music on Gramophone Records. In an interval at **7.30,** Time and Announcements. **7.45,** Tosca—Opera in Three Acts (Puccini), on Gramophone Records. In the intervals, Talk: The Sea at Palermo and Literary Notes. After the Opera, News.

PARIS

PARIS (EIFFEL TOWER), Call FLE, 1,445.7 metres; 13 kW. Time Signals (on **2,650 metres**) at **9.26 a.m.** and **10.26 p.m.** (Preliminary and 6-dot Signals). **5.45 p.m.,** Le Journal Parlé. **7.20,** Weather Report. **7.30,** European Concert, relayed from **Radio-Suisse Romande.** **9.30** (approx.), **Close Down.**

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—**6.45 p.m.,** Journal Parlé. **7.0,** Gramophone Concert of Light Music. **8.0,** Talk on Music. **8.15,** Interval. **8.30,** Concert of Carnival Music by the Station Symphony Orchestra: Overture, Le carnaval romain (Berlioz); Le roman d'Arlequin (Massenet); Symphonic Suite, Poème carvanalesque (C. Silver); Carnival Overture (Dvorák); Selection from Les trois Masques (Isidore de Lara); Carnival (Schumann); Carnaval (ure (Luigini); Selection from Le bal costumé (Rubinstein); Masques et Bergamasques (Fauré); Suite bergamasque (Debussy); Selection from A Masked Ball (Verdi). **10.30,** News.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—**6.45 a.m.,** Physical Culture. **7.30,** Weather and Physical Culture (contd.). **7.45,** Gramophone Records: Wedding Cake (Saint-Saens); Sonata in G Minor (Handel). **8.0,** Press Review and Weather. **12 Noon,** Jewish Address. **12.30 p.m.,** Concert by the Krettly Orchestra: La Voluptueuse (Couperin); Les Papillons (Couperin); First Concerto in C Minor for Two Violins (Bach); Overture, Heimkehr aus der Fremde (Mendelssohn); Trio Serenade in D (Beethoven); Adagio from the Septet (Beethoven); Albumblatt and Novelette (Schumann); Selection from Jocelyn (Godard); Petite Suite (Bizet). In the interval at **1.0,** Exchange, News and **3.45,** Exchange and Market Prices. **4.30,** Elementary English Lesson. **6.10,** Agricultural Talk. **6.30,** Review of New Books **6.50,** Talk on Social Insurance. **7.0,** Talk: Great Days of the French Revolution—July 14th. **7.20,** Light Music by the Krettly Orchestra. **7.30,** European Concert, relayed from **Schweizerischer Landessender.** In the intervals at **8.30,** News and Weather; at **8.40,** Gastronomic Review; and at **9.15,** Press Review and News. **9.45,** Literary Readings. **10.15,** Gramophone Dance Music.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW. Relayed by **W8XK** on **48.86 metres** and **25.27 metres.** **9.0 p.m.,** Talk by Dr. Emlyn Jones. **9.10,** Business News. **9.15,** S.A.I. Musicale (Carnegie Tech Chapter). **9.30,** Weather Report. **9.32,** Market Reports. **9.45,** Pianoforte Interlude. **9.50,** David Lawrence Dispatch. **9.55,** KDKA Artist Bulletin. **9.58,** Programme Announcements. **10.0,** Muskingum College Music Clubs. **10.15,** Programme to be announced. **11.15, New York** Relay. **10.30,** The Singing Lady. **10.45,** Little Orphan Annie. **11.0,** Our Daily Food by George Rector and Judge Gordon. **11.15,** Time Signal. **11.16,** Weather Report. **11.17,** Teaberry Sport Review. **11.22,** Press News Reeler. **11.27,** Strange Facts. **11.29,** Temperature Report. **11.30,** KDKA Orchestra. **11.45 to 3.15 a.m. (Saturday), New York** Relay. **11.45,** To-day's News by Lowell Thomas. **12 Midnight,** Pepsodent Amos 'n' Andy **12.15 a.m.,** Hilda Burke (Soprano). **12.30,** Five Star Theatre—Charlie Chan. **1.0,** Nestle's Programme. **1.30,** Time Signal and Adventures in Health. **1.45,** Howard Thurston, the Magician. **2.0,** The First Nighter. **2.30,** Armour Programme. **3.0,** Alice Joy with Rollickers. **3.15,** Westinghouse Pioneers. **3.30,** Bridge School of the Air by E. Hall Downes. **3.45,** Bradley Kincaid. **4.0,** Time Signal. **4.1,** Teaberry Sport Review. **4.11,** Temperature Report. **4.12,** Weather Report. **4.13,** KDKA Artist Bulletin. **4.15,** Press Last-Minute News Flashes. **4.20,** Smith Ballew and his Orchestra. **4.30,** Henry Halstead and his Californians. **5.0,** Cotton Club Orchestra, from **New York.** **5.30,** Time Signal and Good-night.

PORSGRUND.—See **Oslo.**

MARCH 3rd FRIDAY *continued*

PRAGUE

488.6 metres; 120 kW.—**3.10 p.m.,** See **Brno.** **3.55,** Talk: Town Planning. **4.5,** Concert by the Ondricek Quartet: String Quartet in G, Op. 8 (Fibich); String Quartet No. 1 in E Minor, from out my Life (Smetana). **5.5,** Agricultural Market Prices. **5.15,** Talk for Workers. **5.25,** News in German. **5.30,** German Transmission: Talk: The History of the Town of Vrchlabi during Four Hundred Years. **6.0,** Chimes from the Church of St. Loudmila, Kralovske-Vinohrady. **6.1,** News. **6.10,** Talk: The Private Life of the Czech Kings. **6.25,** Concert by the Holesovice Vocal Quintet. **6.55,** Concert by the Benes Brass Band. **7.30,** European Concert, relayed from **Radio Suisse Romande.** In the intervals at **8.0** and **9.0,** Time Signals. **9.30,** News. **9.45** (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; **LAUSANNE, 680 metres;** and **GENEVA, 760 metres.**—**6.0 p.m.** (from **Lausanne**). Weather, News, and Announcements. **6.30** (from **Lausanne**). Lesson in Book-keeping. **7.0** (from **Lausanne**). Song Recital by Mme. Berthe de Vigier. **7.30,** European Concert. Part One.—German-Swiss Programme: Old Swiss March; Two Old Songs by the Zürich Male Voice Choir; Festival Music. Part Two.—Italian-Swiss Programme: Songs by a Children's Choir and Soloists. Part Three.—French-Swiss Programme: Selection for Choir, Orchestra, and Soloist from (a) La Fête des vignerons (Doret), and (b) La Fête de Juin (Jacques-Dalcroze). Part Four.—Swiss Tyrol Programme: Two Songs by the Zürich Male Voice Choir. Part Five.—Finale: Two Popular Songs by the Zürich Male Voice Choir; Potpourri of Swiss Songs by the Orchestra and Zürich Male Voice Choir; Le Cantique Suisse for Choir and Orchestra (Zwissig). **9.30,** News and Weather. **9.45** (approx.), Close Down.

RIGA

525 metres; 15 kW.—**4.0 p.m.,** Hawaiian Guitar Music: Serenata (Toselli); Good-bye Blues (Hoffmann-Nelson); Waltz, Southern Moon (Smetschnik); Twilight (Kraumann); Souvenirs of Hawaii (Armandola). **4.30,** Topical Talk. **5.0,** Divine Service. **6.30,** Talk. **7.0,** News Bulletin. **7.15,** Song Recital by Gabriele Viksne-Apinis. **8.0,** Weather, News and Popular Music on Gramophone Records.

RJUKAN.—See **Oslo.**

ROME

Call 1RO, 441 metres; 50 kW. Relayed by **Naples, 319 metres;** and **2RO, 25.4 metres.**—**7.0 a.m.,** Gymnastics. **7.15 to 7.30,** Weather and Announcements. **11.30,** Weather, and Light Music on Gramophone Records. **12 Noon,** Time and Announcements. **12.30 to 12.45,** Giornale Radio and Exchange. **3.0,** 'Cello Recital by Luigi Silva, relayed from the Royal Academy of Saint Cecilia. **6.0 (Naples),** Shipping and Sports Notes. **6.15,** Agricultural and Dopolavoro Notes. **6.20,** Giornale Radio and Gramophone Records of Popular Music. **7.0,** Time, Announcements and Report of the International Institute of Agriculture (in Italian, French, English, German and Spanish). **7.30,** Talk on Sport, Sports Notes and Tourist Report. **7.45,** Variety Concert. Soloists: Margherita Cossa (Soprano), Tito Rosati ('Cello), Gualda Caputo and Perea Labia (Soprano), Alfredo Sernicoli (Tenor), and Guglielmo Castello (Baritone), and Bianca Bianchi and Luisa Castellazzi (Mezzo-Soprano). Quartet for two Violins, Viola and 'Cello (Grieg). **8.15,** Fuggiano—Comedy in One Act (Lucilla Antonelli). **9.0,** Concert (contd.): Overture, The Secret Marriage (Cimarosa); Soprano Solos: (a) Ah perfido! (Beethoven), (b) Aria from Der Freischütz (Weber); 'Cello Solos: (a) Adagio (Tartini), (b) Kleines Ständchen (Grünfeld), (c) Gavotte (Grünfeld); The First Act of Cendrillon (Massenet). **9.55,** News Bulletin.

SALZBURG.—See **Vienna.**

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 379.5 metres; 50 kW. Relayed at intervals by **W2XAF** on **31.48 metres** and by **W2XAD** on **19.56 metres.**—**7.30 p.m. to 12.15 a.m. (Saturday), New York** Relay. **7.30,** Three Shades of Blue, Male Trio. **7.45,** Muted Strings. **8.0,** Sonata Recital. **8.15,** Famous Loves—Dramatic Programme. **12 Midnight,** Donald Novis (Tenor). **12.15,** Stock Reports. **12.30 to 1.30, New York** Relay. **12.30,** Van and Don. **12.45,** The Goldbergs—Comedy Sketch. **1.0,** Cities Service Concert. **1.30,** WGY Farm Forum. **2.0,** K-7 Secret Service Spy Stories. **2.30,** Pond's Programme and Programme Resumé.

SCHWEIZERISCHER LANDESSENDER

BEROMUNSTER, 459 metres; 60 kW; **BASLE, 244.1 metres;** and **BERNE, 245.9 metres.**—**11.28 a.m.,** Time Signal from Neuchâtel Observatory. **11.30,** Weather and News. **11.40,** Concert by the Little Radio Orchestra. **12.35 p.m.,** Weather and Exchange. **12.45 to 2.30,** Interval. **2.30,** Light Music on Gramophone Records. **3.30,** Programme for Children. **4.0,** Beethoven Pianoforte Recital on Gramophone Records. **4.30,** Weather. **4.35 to 5.30,** Interval. **5.30** (from **Berne**), Talk: Swiss Dialects. **6.0,** Time, Weather, Market Prices, Tourist Report and Winter Sports Notes. **6.20** (from **Berne**). Professor Plattensteiner reads from his own Works. **6.45** (from **Berne**), Pianoforte Recital by Claudio Arrau. **7.15,** Variety Music on Gramophone Records. **7.30** (from **Zürich**). Programme of Swiss Music and Songs. **9.15** (approx.), Weather, News and Close Down.

SOTTENS.—See **Radio-Suisse Romande.**

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by **Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,348 metres; Ostersund, 770 metres,** and **Sundsvall, 542 metres.**—**4.5 p.m.,** Folk Music. **4.30,** Reading. **5.0,** Popular Music on Gramophone Records. **5.55** (from **Göteborg**), Talk on World Language Questions (V)—The West. **6.15,** Weather and News. **6.30,** Popular Music on Gramophone Records. **7.10,** Talk on Foreign Politics. **7.30,** 'Cello and Pianoforte Recital of Brahms Music by Otto Lützhöft and Walter Meyer-Randon, relayed from **Malmö (231 metres):** Sonata in E Minor, Op. 38, for 'Cello and Pianoforte; Pianoforte Solos: (a) Intermezzo in A, Op. 118, (b) Ballad in G Minor, Op. 118, (c) Waltzes, Op. 39. **8.15,** Talk. **9.0,** European Concert, relayed from **Radio Suisse Romande.** **9.30** (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW. **11.30 a.m.,** Gramophone Concert: Extracts from the Symphonie fantastique (Berlioz); Extracts from Parsifal (Wagner); Polovtsian Dances from Prince Igor (Borodin). **12.45 p.m.,** News. **1.0,** Time and Exchange. **1.5,** Gramophone Concert of Light Music. **2.0 to 4.45,** Interval. **4.45,** Literary Talk in French: Boileau. **5.0,** Concert of Jazz Music, conducted by Roskam. **6.0,** Trio Concert, relayed from **Lille (265.4 metres).** **7.0,** Topical Talk in German. **7.15,** Talk: The Alsatian Boatmen on the Rhine. **7.30,** Time and News. **7.45,** Lottery Results. **8.0,** European Concert, relayed from **Radio-Suisse Romande.** **10.30** (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and **FREIBURG, 570 metres.**—**11.0 a.m.,** Concert from **Frankfurt.** **12.15 p.m.,** Time, Weather, News, and Programme Announcements. **12.30,** Concert from **Langenberg.** **1.0,** Sponsored Programme. **1.30,** Advanced English Lesson. **4.0,** See **Langenberg.** **5.15,** Time, Weather, and Agricultural Notes. **5.25,** Talk: Pens and Handwriting. **5.50,** First-aid Lesson. **6.15,** Talk: Ideas for a Sunday Ramble. **6.25,** Time and News. **6.30,** Recital of Unfamiliar Arias by Margaret Wetter (Soprano); Rusalka's Aria from Rusalka (Dvorak); Manon's Aria from Manon Lescaut (Puccini); Marietta's Song from Die tote Stadt (Korngold); Recitative from André Chénier (Giordano); Chimène's Aria from Le Cid (Massenet). **6.50,** Werktag—a Picture of Swabian Peasant Life; Songs, Zither Music, and Recitations arranged by Martin Lang. **7.30,** European Concert, relayed from **Radio-Suisse Romande.** **9.30,** Time, Weather, News, Sports Notes, and Programme Announcements. **9.55,** Talk: What People are talking about in America, relayed from **America.** **10.10,** Dance Music by the Stuttgart Philharmonic Dance Band, conducted by Harry Risch. **11.0** (approx.), Close Down.

SUNDSVALL.—See **Stockholm.**

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—**6.0 p.m.,** News. **6.15,** Mascarade (Lacome), by a Symphony Orchestra. **6.30,** Chansonnettes. **6.45,** Popular Music. **7.0,** Tourist Talk. **7.15,** Racing Results, Market Prices, and News. **7.25,** Local News Bulletin. **7.30,** Orchestral Concert of Popular Music. **8.0,** Opera Music. Selection from: (a) The Tales of Hoffmann (Offenbach), (b) Faust (Gounod), (c) Sigurd (Reyer). **8.15,** Music by a Viennese Orchestra. **8.45,** Symphony, No. 7 (Beethoven), by a Symphony Orchestra. **9.15,** Programme of Tangos. **9.30,** Opera Music. Selection from: (a) William Tell (Rossini), (b) Don Giovanni (Mozart). **9.45,** Songs from Sound Films. **10.0,** Organ Music. **10.15,** North African News. **10.30,** Concert for Listeners in Morocco. March from The Valkyries (Wagner); Duet from Act IV of La peau de chagrin (Levadé); Overture, Poet and Peasant (Suppé); Léo, Léa, Elie (Gabaroche); Banjo Solo: La Seduzione (Accordi). **11.0,** Military Music. Morning, Noon and Night (Suppé); The Glow Worm Idyll (Lincke); Geburtstagständchen (Lincke). **11.15,** Music by an Argentine Orchestra. **11.30 to 12 Midnight,** Programme in English by the I.B.C. The I.B.C. Half-Hour. Mr. H. K. Hitchcock announcing. Organ Music; Serenade; I'm just wearing my Heart out; I wasn't ashamed of you, Mother; A Perfect Day; Indian Love Call from Rose Marie (Friml); Three little Words; Will they love me up in Heaven?; Londonderry Air. **11.57,** I.B.C. Good-night Melody. **12 Midnight,** Weather and Announcements. **12.5 a.m. (Saturday),** Musical Programme. **12.30** (approx.), Close Down.

TRIESTE

247.7 metres; 10 kW.—**3.0 p.m.,** See **Rome.** **5.35,** See **Turin.** **6.0,** Light Music on Gramophone Records. **6.20 to 6.35,** See **Turin.** **6.35,** Orchestral Music from the Café Dante. **7.0** till Close Down.

TRONDHEIM.—See **Oslo.**

TURIN

273.7 metres; 7 kW. Relayed by **Milan, 331.5 metres; Genoa, 312.8 metres;** and **Florence, 500.8 metres.**—**3.0 p.m.,** See **Rome.** **5.35,** Giornale Radio, Agricultural and Dopolavoro Notes. **6.0,** Variety Music on Gramophone Records. In the intervals at **6.20,** Giornale Radio; and at **6.30,** Time, Announcements and Report of the Royal Geographical Society. **7.0,** Giornale Radio, Weather and Gramophone Records (contd.). **7.30,** Talk on Sport, followed by Gramophone Records of Light Music. **8.0,** Symphony Concert, conducted by Bernardino Molinari. Overture, Nina (Paisiello); Fifth Symphony in C Minor (Beethoven); Symphonic Poem, Don Juan (Richard Strauss); Scherzo from L'Apprenti Sorcier (Dukas). Talk in the interval. **10.0,** Giornale Radio.

VATICAN CITY

19.84 metres (Morning) and **50.26 metres (Evening);** 10 kW.—**10.0 to 10.15 a.m.,** Religious Information in German. **7.0 to 7.15 p.m.,** Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by **Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 245.9 metres;** and **Salzburg, 218.5 metres.**—**3.45 p.m.,** Instrumental Concert of German Music. **5.10,** Tourist Report. **5.25,** Sports Notes. **5.30,** Talk on the Ski Championships at Innsbruck. **5.55,** Talk on State Theatres. **6.10,** A Discussion between Dr. Max Eisler and Three Architectural Students. **6.35,** Time, Weather and Programme Announcements. **6.45,** Talk by Kurt G. Sell: What People are talking about in America, relayed from **America.** **7.0,** Reading. **7.30,** European Concert, relayed from **Radio-Suisse Romande.** In an interval, News, Weather and Announcements. **9.30,** Traffic Report. **9.40,** Gramophone Concert: Waltz, Die Schönbrunner (Lanner); Foxtrot, How are You? (Steininger-Pola-Rillo); St. Louis Blues (Handy); Foxtrot, How's your Uncle (McHugh-Fields); Tango, Ilona (Roman); Foxtrot, Sing Brothers (Weston-Lee); Foxtrot, Just Friends (Klemmer-Levis); Tango, Es war einmal ein Musikus (Schwarz); Waltz, Paradise (Brown-Clifford); Foxtrot, The old Kitchen Kettle (Woods-Campbell-Connelly); Tango, Arrepentimiento (Chiappo); Blues, Goodbye (McHugh-Fields-Johnson).

WARSAW

1,411 metres; 120 kW.—**10.58 a.m.,** Time Signal and Bugle Call from the Tower of St. Mary's Church, Cracow. **11.5,** Programme Announcements. **11.10,** Popular Music on Gramophone Records. **12.20 p.m.,** Weather Forecast. **12.25 to 2.10,** Interval. **2.10,** Announcements. **2.15,** Economic Notes. **2.25,** Aviation Notes and Anti-Gas Drill. **2.30,** Naval and Colonial Report. **2.35,** Review of Periodicals. **2.50,** Light Music on Gramophone Records. **3.20,** Talk on History: Feudalism. **3.40, Talk. 4.0,** Wind Instrument Concert; Conductor, André Bromke: Polonaise (Larosse); Overture, Indra (Flotow); Waltz, Künstlerleben (Joh. Strauss); Scottish Caprice (Kling); Spanish Rhapsody (Lalo); Waltz-Intermezzo (Translateur); March from Aïda (Verdi). In the interval, Announcements. **4.55,** Programme Announcements. **5.0,** Talk on Polish Literature: Malczewski. **5.20,** Topical News. **5.25,** Light Music on Gramophone Records. **5.50,** Ski-ing Report, relayed from **Cracow (312.8 metres).** **6.0,** Miscellaneous Items. **6.20,** Talk: Cotton and Wool. **6.30,** Reading. **6.45,** Radio Journal. **7.0,** Talk: The Literary World. **7.15,** Introductory Talk to the Following Relay. **7.30,** European Concert, relayed from **Radio Suisse Romande.** **9.30,** Sports Notes. **9.35,** Radio Journal. **9.40,** Light Music on Gramophone Records. **9.55,** Aviation Weather Report and Police Notes.

ZAGREB

307 metres; 0.75 kW.—**4.0 p.m.,** Trio Concert. **6.20,** Sports Notes. **6.35,** Educational Notes. **6.55,** Popular Science Talk. **7.20,** Introduction to the following Relay. **7.30,** European Concert, relayed from **Radio-Suisse Romande (Sottens).** **9.30,** News, Weather and Snow Report. **9.40** (approx.), Close Down.

ZURICH.—See **Schweizerischer Landessender.**

SATURDAY
MARCH THE FOURTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL Band busic. Navy c. Army: A running commentary on International Rugby Football Match, relayed from Twickenham. "Songs from the Shows," feature programme, by John Watt. A Quilter orchestral programme.

LONDON REGIONAL Mr. S. P. B. Mais: "The Week-end." Russian Balalaika orchestral programme. Instrumental concert. Leicester Brass Band festival. Chamber music.

MIDLAND REGIONAL From the Musical Comedies, orchestral programme. "Granite Quarrying": A talk by Mr. C. H. Martin. Leicester Brass Band festival.

NORTH REGIONAL Mr. Ernest Dyer: "The City of Durham and the Wear." Orchestral concert. "Beckside Chronicles," by Zachariah Briggus. "Billy Birkby." The Lancashire Mummers' Concert Party.

WEST REGIONAL Mr. W. B. Henderson: "The Ancient Shrines of Wells and Glastonbury." Orchestral concert from National Museum of Wales. Welsh interlude.

SCOTTISH REGIONAL Eye-witness account of the fourth round tie in the Scottish Cup. Mr. George Blake: "The Week in Scotland."

BELFAST Mr. R. J. Welch: "Where to find Flint Arrowheads." Amateur Flute Band concert. Orchestral concert from the Wellington Hall. Two plays: "Derrick Rummell," by P. L. McCann, and "Simon, the Awful," by P. L. McCann.

ABROAD

BRUSSELS (No. 1) 8 p.m. Gluck and Wagner concerts from the Théâtre Royal de la Monnaie.

PALERMO 7.45 p.m. Operetta: "A Waltz Dream" (Oscar Straus).

ATHLONE

413 metres; 60 kW.; and CORK, 224.4 metres.—1.30 to 2.0 p.m., Time, Weather Forecast, Stock Report, and Light Music on Gramophone Records. **6.20,** Gramophone Concert of Popular Music. **7.20,** News. **7.30,** Time Signal. **7.31,** Talk. **7.45,** Gaelic Talk by Seamus O'Duirinne. **8.0,** Concert by the Dublin Philharmonic Society relayed from the McIntyre Hall. **10.0,** Lecture Recital by Carl Hardebeck. **10.30,** Time, News, Weather Report, and Close Down.

BARCELONA

RADIO-BARCELONA, Call EAJ1, 348.3 metres; 8 kW.—6.0 p.m., Programme for Children. **7.0,** Request Gramophone Records. **7.30,** Exchange Quotations and Catalan Grammar Lesson. **8.0,** Light Music on Gramophone Records and News. **9.0,** Chimes from the Cathedral, Weather Forecast, Exchange Quotations and Market Prices. **9.5,** Concert by the Station Orchestra: March (Lincke); Hindu Reverie (Staub); Berceuse (Defosse); Military Polonaise No. 1 (Chopin). **9.30,** A Musical Comedy, relayed from **Madrid (EAJ7). 11.0** (in an interval), News Bulletin.

BARI

269.8 metres; 20 kW.—7.0 p.m., Agricultural Report, Tourist Talk, and Dopolavoro Notes. **7.20,** Giornale Radio, Sports Notes, and Weather Forecast. **7.30,** Time Signal and Announcements. **7.35** (approx.). Concert of Operetta Music and Songs. In the interval, Reading. **9.20,** Popular Music on Gramophone Records. **9.55,** News Bulletin.

BASLE.—See **Schweizerischer Landessender.**

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—12.45 p.m., News Bulletin. **1.0,** Gramophone Concert from **Berlin (Witzleben). 2.0,** Programme for Children. **2.30,** Weather and Exchange. **2.45,** Reading (Paul Alverdes). **3.0,** Talk: The Mother and the Nation. **3.30,** See **Hamburg. 3.10,** Weekly Review. **5.0,** Pianoforte Recital: Scherzo (d'Albert); Soirées de Vienne (Schubert-Liszt); Concert Paraphrase on Rigoletto (Verdi-Liszt). **5.30,** Talk: Unemployed Theatre Artists. **5.55,** Weather and Announcements. **6.0,** Schütz Motets by the Flensburg Oratorio Society. **7.0,** Programme for all German Stations, relayed from **Heilsberg. 8.15,** Winter Relief Programme, from **Hamburg. 9.0,** Weather, News, and Sports Notes. **9.25,** Gramophone Report of the Installation of Franklin Roosevelt as President of the United States. **9.45,** Weather Report for Shipping. **10.0,** Light Music from **Berlin (Witzleben). 11.0** (approx.). Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.- 3.0 p.m., Orchestral Concert, conducted by Bruno Seidler-Winkler: Prelude and Entr'acte from Der Corregidor (H. Wolf); Dance Fantasia, Op. 35 (Weismann); Serenade, Op. 53, No. 3 (Kienzl); Suite, Vasantasena (Halvorsen). **4.0** (approx.). Ornithological Talk: In Search of the Rail of the Primeval Forests. **4.15** (approx.). Concert (contd.): La Burla, Op. 78 (Weingartner); Elfenreigen (Klose); Moorish Rhapsody (Humperdinck). **5.0,** Talk: Herr Frick, Minister of State. **5.15,** Recital of Sacred and Secular Folk Songs from St. Nicholas Church. **5.55,** The Witzlehen Station informs its Listeners . . . . **6.0,** Topical Talk. **6.10,** The Watchword. **6.15,** Men of Yesterday speak to Men of To-day. **7.0,** Transmission for all German Stations, relayed from **Heilsberg. 8.15,** Orchestral Concert, conducted by Gustav Havemann. **9.0,** Weather, News, and Sports Notes. **9.25,** President Roosevelt takes up Office—Relay of the Festivities from **New York** (on Gramophone Records). **9.45,** Orchestral Concert (contd.). In the interval at **10.30,** Talk: The Intellectual Break-up of the Age. **11.30** (approx.). Close Down.

BERNE.—See **Schweizerischer Landessender**

BEROMUNSTER. — See **Schweizerischer Landessender.**

BODEN.—See **Stockholm.**

BODO.—See **Oslo.**

BRATISLAVA

279 metres; 14 kW.—3.10 p.m., Fucik Concert by the Station Orchestra, conducted by J. Odehazel. **4.10,** Talk: The Anti-Alcohol Campaign in Great Britain, Denmark, and Belgium. **4.25,** Light Music on Gramophone Records. **4.45,** Marionette Play. **5.45,** Talk for Housewives. **6.0,** See **Prague. 6.25,** See **Brno. 6.55,** See **Prague. 8.0,** Concert of Operetta Music by the Station Orchestra, conducted by F. Dyk: Overture, Gipsy Love (Lehár); Two Duets (Nedbal); Song (Kinel); Two Songs from The Geisha (Sidney Jones); Two Duets from Polenblut (Nedbal); Waltz. (Provaznik). **9.0,** See **Prague. 9.15,** see **Moravská-Ostrava. 10.30** (approx), Close Down.

BREMEN.—See **Hamburg.**

BRESLAU

325 metres; 1.5 kW.; and GLEIWITZ, 253 metres.—12.10 p.m., Gramophone Concert of Popular Music. **12.45,** Time, Weather, News and Exchange. **1.5,** Gramophone Concert of Variety Music. **1.45,** Sponsored Programme with Gramophone Records. **2.10,** Agricultural Prices. **2.30,** Film Notes. **2.50,** Book Review. **3.10,** Talk: Intellectual Achievements of Eastern Germany. **3.40,** See **Hamburg. 4.30,** Talk: Violins, Old and New. **4.55,** Confessions, with Introductory Talk. **5.25,** Programme to be announced. **6.0,** President Roosevelt takes up Office. Radio Report by Kurt G. Sell on the Ceremony and Festivities, relayed from **America. 6.20,** Weather for Farmers. **6.25,** Gramophone Concert: Potpourri. The World in Song (Intrator); Gipsy Romance; Song of the Puszta; Mazurka, Frauenhetzen (Jos. Strauss); Pasodoble from Ein Mann Mit Herz (Stolz-Gilbert); March, Der kreuzfidele Kupferschmied (Peter); Potpourri, Wiener Spaziergänge (Komzak). **7.0,** Transmission for all German Stations, relayed from **Heilsberg. 8.15,** See **Berlin (Witzleben). 9.0,** Time, Weather, News, Sports Notes and Programme Announcements. **9.30,** Festival Programme on Gramophone Records from **Berlin (Witzleben). 11.0** (approx.), Close Down.

BRNO

342 metres; 25 kW.—5.25 p.m., German Transmission: News and Concert of Modern Dances: Funeral Sarabande and Minuet from the Suite Op. 24 (Gal); Waltz, Op. 23 (Kornauth); Golliwog's Cake Walk from The Children's Corner (Debussy); Sonatina Minuetto (Casella); Spanish Melodies (Albéniz); Russian Dance (Stravinsky); Copacabana, Spanema and Tijuca (Milhaud); Foxtrot (Tedesco); Spiritual, Blues and Charleston from Transatlantic Sonatina (Tausmann). **6.0,** See **Prague. 6.25,** Concert by the Schrammel Orchestra. **6.55,** See **Prague. 8.0,** See **Bratislava. 9.0,** See **Prague. 9.15,** See **Moravská-Ostrava. 10.30** (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—12 Noon, Dances of Yesterday—Concert by the Small Station Orchestra, conducted by P. Leemans: Marche parisienne (Popy); Mazurka, La Czarine (Ganne); Waltz, Donauwellen (Ivanovici); The Glow-worm Gavotte (Lincke); The Lancers' Quadrille (Metra); Quadrille (Offenbach); Schottische, In the Shadows (Finck); Mazurka naturaliste (Ganne); Gavotte des baisers (Popy); Gallop (Demaele). **1.0 p.m.,** Le Journal Parlé. **1.10,** Schumann Concert by the Small Orchestra, conducted by P. Leemans: Album for the Young: Melody; Songs by Mlle. Van Lil: (a) Song, (b) Song, (c) In der Ferne, (d) Die Rose, die Lilie, die Taube; Canon; Arabesque for Pianoforte; Melody; Gipsy Dance. **5.0,** Concert by the Symphony Orchestra, conducted by A. Menlemans: Ballet Extracts (Lully); Suite en forme de danses (Rameau). **5.30** (approx.), Programme for Children. **6.5,** Literary Review. **6.15,** Music on Old Instruments—Gramophone Concert: Passepied and Gavotte in G (Bach); Menuet du pays du Tendre (Destouches); Plaisir d'amour (Martini); Le Concon (Daquin); Tambourin (Mozart). **6.30,** Tchaikovsky Concert by the Small Orchestra, conducted by P. Leemans: Danse caractéristique; Romance for Violin; Extracts from Mozartiana; Melody for 'Cello; Romance in F Minor; Extracts from the Nutcracker Ballet. **7.15,** Report of the Belgian Catholic Radio Society. **7.30,** Review of International Events and Gardening Hints for March. **8.0,** Concert by the Symphony Orchestra, conducted by A. Menlemans, Soloist: Mme. Laure Bergé (Songs). Part I: Gluck Programme: Overture, Iphigenia in Aulis; Song from Alceste; Ballet Music from Alceste; Song from Armide; Ballet Music from Orphée. **8.45,** Talk by Mgr. Ladeuze, Rector of the Catholic University at Louvain. **9.0,** Concert (contd.). Part II: Wagner Programme: The Ride of the Valkyries; Song from Siegfried; Prelude and the Death of Isolde from Tristan und Isolde; Good Friday Magic from Parsifal. **10.0,** Le Journal Parlé. **10.10,** Request Gramophone Records: Overture, The Damnation of Faust (Berlioz); Forest Murmurs from Siegfried (Wagner); The Legend of the Graal, from Lohengrin (Wagner); Overture, Figaro (Mozart); Melody from The Pearl Fishers (Bizet); Anitra's Dance (Grieg). **10.35,** Suite from L'Histoire du Soldat (Stravinsky). **10.55,** Christus Vincit (Liszt). **11.0,** Light Music on Gramophone Records. **12 Midnight,** Close Down.

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW.—Programme in Flemish. **12 Noon,** Concert relayed from the Grand Hotel, Antwerp: Overture, Lysistrata (Lincke); Musical Revue (Aston); Bébé danse (Michels); Suite from Sylvia (Delibes); 'Cello Solo; Kol Nidrei (Bruch); Selection from Tiefland (d'Albert). **1.0 p.m.,** Le Journal Parlé. **1.10,** Concert (contd.): Overture, The Merry Wives of Windsor (Nicolai); Potpourri, Eisblumen (Leuschner); 'Cello Solos: (a) Aria (Bach), (b) Polonaise (Popper); 1933 Potpourri (Dostal); Im Casino steht ein Pianino (Stolz). **5.0,** Concert by the Radio Orchestra, conducted by Charles Walpot: March, Entry of the Gladiators (Fucik); Waltz Memories of Josef Strauss (Fahrbach, Jr.); Overture, Poet and Peasant (Suppé); Girl (Poot); Rhapsody in B (Hartung); To the Sound of the Cigány Band (Meyer-Helmund); Suite from The Sleeping Beauty (Tchaikovsky). **6.0,** Reading (Zielens). **6.15,** Talk. **6.30,** Borodin Music on Gramophone Records: Symphony No. 2; Scherzo; Nocturne from the Quartet in D Minor; Polovtsian Dances. **7.15,** Talk: Gerhard Mercator. **7.30,** Film Review. **8.0,** Concert by the Radio Orchestra, conducted by Charles Walpot. Soloist: Mlle. Brulez (Mezzo-Soprano). March, Little Belgian (Sykes); Waltz, Je t'aime (Waldteufel); Overture, Morning, Noon and Night (Suppé); Songs; Potpourri, Ripe Fruit (Morena). **8.45,** Talk: Candles—Customs and Popular Beliefs. **9.0,** Concert (contd.): Sambre et Meuse (Planquette); Overture, William Tell (Rossini); Waltz, Frühlingsstimmen (Joh. Strauss); Selection from Ta Bouche (Yvain); Songs; Ballet Music from Coppélia (Delibes); Czardas for Xylophone (Michiels); Foxtrot, Oh Mona. **10.0,** Le Journal Parlé. **10.10** Gramophone Records of Light Music. **10.30,** Concert, relayed from the Ancienne Belgique. **12 Midnight,** Close Down.

BUCHAREST

394 metres; 12 kW.—4.30 p.m., Concert of Light Music and Romanian Music by the Sibiceano Orchestra. **5.0,** News and Time Signal. **5.10,** Talk. **5.25,** Concert (contd.). **6.0,** Talk on Romania: Her Industrial Policy. **6.40,** Light Music on Gramophone Records. **7.0,** Time Signal. **7.1,** Concert by the Station Orchestra: Overture, Le Roi l'a dit (Delibes); Selection from Gasparone (Millöcker); Oriental Piece, Ben Akiba (Siede). **7.30,** Talk. **7.45,** Song Recital by Mme. Solomoneano: Ich wand're nicht (Schumann); L'oiseau bleu (Chardier); Serenade (Pierné). **8.5,** Concert by the Station Orchestra (contd.): Violin Solo; Melody from Sylvia (Delibes); Romanian Potpourri (Paschill). **8.45,** News.

BUDAPEST

550 metres; 18.5 kW. 6.30, Close Down. Programme also relayed on **840 metres.—4.30 p.m.,** Viennese Song Recital by Radis Hilda Boek. **5.15,** Answers to Correspondents. **5.45,** Orchestral Concert: Overture, Der Schneemann (Korngold); Selection from I Pagliacci (Leoncavallo); Algerian Suite (Saint-Saëns); Selection from Der Freischütz (Weber); Dance Scenes (Glazunov); Von Gluck bis Wagner (Schreiner). **7.0,** One-Act Radio Play, followed by Announcements. **8.40,** Cigány Music by the Reszö Horvath Band, relayed from the Emke Café. **9.30,** Relay from the Labriola Theatre. **10.15,** Cigány Music by the Horváth Band, relayed from the Café Emke.

CASSEL.—See **Frankfurt.**

COPENHAGEN

281 metres; 0.75 kW.; and KALUNDBORG, 1,153 metres; 7.5 kW., 11.0 a.m., Time Signal and Chimes from the Town Hall. **11.2,** Concert by the A. Bendix String Ensemble, relayed from the Wivex Restaurant. **1.0 to 1.30,** Interval. **1.30,** Gramophone Concert. **2.0,** Programme for Children. **2.30,** Wind Instrument Concert, conducted by Lanny Gröndahl. Soloist: Grete Christiansen (Pianoforte). March, King Cotton (Sousa); Overture, Martha (Flotow); Waltz, Dreams on the Ocean (Gungl); Rustle of Spring (Sinding); Selection from La fille de Madame Angot (Lecocq); Gallop, Husarenattacke (Eilenberg); Pianoforte Solos (Chopin): (a) Nocturne in E, (b) Berceuse in D Flat, (c) Scherzo in C Sharp Minor; Battle March (Möller); Waltz, Estudiantina (Waldteufel); Military Parade (Massenet); Fantasia on Guild Songs (Reesen); Bourrée from the Suite ancienne (Halvorsen); Aubade printanière (Lacombe); March (Blon). **4.40,** Exchange and Fish Market Prices. **4.50,** Talk and Reading in German: The Austrian Author, Anton Wildgans. **5.20,** Elementary French Lesson. **5.50,** Weather. **6.0,** News. **6.15,** Time. **6.30,** Talk: The Significance of Christianity to us and to our Age. **7.0,** Time Signal from the Town Hall. **7.1,** Concert of Music by Emmerich Kálmán, conducted by the Composer, relayed from the Odd Fellows' Hall. **9.0,** News. **9.15,** Reading (Carl Aretander). **9.35,** Pianoforte Recital by Gudrun Seligmann. Soirée de Vienne, No. 6 (Schubert-Liszt); Fantasia in D Minor (Mozart); German Dances (Schubert). **9.55,** Dance Music, relayed from the Lorry Etablissement. In the interval at **11.0,** Time Signal and Chimes from the Town Hall. **11.15** (approx.), Close Down.

CORK.—See **Athlone.**

DANZIG.—See **Heilsberg.**

DRESDEN.—See **Leipzig.**

FECAMP

225.9 metres; 10 kW. 12 Noon, Variety Music on Gramophone Records. **12.30 p.m.,** News. **12.45,** Concert of Light Music. **6.0 to 7.0,** Programme in English by the I.B.C. Announcers: C. Danvers Walker, R. Chene, B. McNabb and W. Crofton. **6.0,** Vocal Concert for Folkestone Listeners: The future Mrs. 'Awkins (Chevalier); Just a Dancing Sweetheart (Tobias); My old Dutch (Chevalier); My old Irish Mother (O'Donnell); Life (Sarony); Lily of Laguna (Stuart); Poor Kid (Gilbert); Little Dolly Daydreams (Stuart). **6.30,** Concert for Isle of Thanet Listeners. Orchestra: Some of these Days; It don't mean a Thing. Pianoforte Solo: She didn't say Yes. Vocal Trio: Down among the sheltering Palms. Orchestra: Out of Breath; Coney Island Washboard. Vocal Trio: We just couldn't say Good-bye. Orchestra: Aphrodite Waltz. **7.0,** News and Light Music on Gramophone Records. **7.30,** Radio Gazette. **7.50,** Answers to Correspondents and News. **8.0,** Extracts from Manon—Opera

in Five Acts (Massenet). **11.0** till Close Down. Programme in English by the I.B.C. **11.0**, Concert: Selection from The King of Jazz (Somers); The old Man of the Mountain; Balloons; Sweet Muchacha; Toasts; My Romance; Open up dem pearly Gates; Selection from The Three Musketeers (Friml). **12 Midnight**, Concert. Songs: (a) Every little Girl he sees (Akst), (b) Here in my Heart (Campbell), (c) Nobody cares if I'm blue (Clarke). Xylophone Solo: Looping the Loop (Easton). Songs: (a) O dem Golden Slippers (Bland), (b) When it's Sunset on the Nile, (c) Poor old Joe (Foster). Xylophone Solo: Marionette (Easton). **12.30 a.m. (Sunday)**, Comedy Duets: Crystal Gazing; Afloat; Moonshine; In the Trenches; Fun on the 'plane; The Police Station; Happy Days. **1.0**, Accordion Solos: Blue Bells (Beaton); Mason's Apron (Reel); Prince Charlie (Beaton); Rakes of Clonmel; Medley of English Airs (arr. Cuvelier); The Wee MacGregor Patrol (Amers); Medley of Scotch Airs (arr. Cuvelier); The Minstrel Boy (arr. Cuvelier). **1.30**, Concert. Songs: (a) Always in my Heart, (b) Let's put out the lights, (c) I'll never be the Same. Orchestra: Miracle Melodies. Songs: (a) How deep is the Ocean?, (b) Wonderful you, (c) Wandering around. **2.0**, Dance Music: Put that Sun back in the Sky; Georgia on my Mind; Lullaby of the Leaves; Good-night Vienna; Goofus; You've got what gets me; If I didn't have you; Love you funny Thing; The Echo of a Song; Don't tell a Soul; Gone for ever; Living in Clover; One little Quarrel; I got Rhythm; Oh, Monah! It ain't no Fault of mine. **2.57**, I.B.C. Good-night Melody. **3.0**, Close Down.

FLENSBURG.—See **Hamburg.**

FLORENCE.—See **Turin.**

FRANKFURT

259 metres; 17 kW.; and **CASSEL, 245.9 metres**; and **TRIER, 259.3 metres.—4.0 p.m.**, Orchestral Concert. **5.5**, Economic Notes. **5.10**, Dialogue: Would it be practicable to fix Rates of Professional Remuneration? **5.35**, Discussion on the South German Protestant Churches. **6.0**, President Roosevelt takes Office—a Radio Report from America. **6.25**, Time, Programme Announcements, Weather, and Exchange. **6.30**, Chamber Music by the Lenzewski Quartet: String Quartet (Bodo Wolf); String Quartet (Karl Marx). **7.0**, Programme for all German Stations relayed from **Heilsberg. 8.15 to 9.35**, See **Stuttgart. 9.35**, Time, News, Weather, Sports Report, and Review of the Ski-ing Events of the Year. **10.0**, Dance Music from **Stuttgart. 11.0** (approx.), Close Down.

FREDRIKSSTAD.—See **Oslo.**

FREIBURG.—See **Stuttgart.**

GENEVA.—See **Radio-Suisse Romande.**

GENOA. See **Turin.**

GLEIWITZ.—See **Breslau.**

GOTEBORG.—See **Stockholm.**

GRAZ.—See **Vienna.**

HAMAR.—See **Oslo.**

HAMBURG

Call ha (in Morse), **372 metres**; 1.5 kW. Relayed by **Bremen, 269.8 metres; Flensburg, 227.4 metres; Hanover, 566 metres**; and **Kiel, 232.2 metres.—3.30 p.m.**, Concert by the Hamburg Philharmonic Orchestra, conducted by Adolf Seeker: Overture, Don Giovanni (Mozart); Tarantella from the Italian Symphony (Mendelssohn); Wedding Scenes (Smetana); Wotan's Farewell and Fire Magic from The Valkyries (Wagner); Petite Suite (Debussy); Festliche Musik (Frankenstein). **4.30**, Talk: Fifty Years of the German Rowing Society. **4.55**, The True Sea Story of the Week. **5.5** (from **Hanover**), Concert by the Hanover Station Orchestra; Soloists: Lotte Hormuth and Hubert Endlein (Songs), Marching Song, O Stefanie, from Rund um die Liebe (O. Straus); Lotte Hormuth: (a) Ich bin eine Frau, die weiss was sie will (O. Straus), (b) Oft hab' ich vom Glück geträumt (Kálmán); Autumn Song (Beece); Baby laughs (Plessow); Hubert Endlein: (a) Träum' mein kleines Baby (Hajos-Meisel), (b) Du lieber Herrgott (Fred David-Stolzenwald); Selection from Hoheit tanzt Walzer (Ascher); Duets: (a) Ich weiss nicht, wie ich dir's sagen soll from Mein Leopold (Ascher), (b) Es ist besser so from Ronny (Kálmán); Carramboling, Carramboletta (Kálmán). **6.0** (from **Bremen**), Dialogue: Bremen buys Australian Wool. **6.25**, Forecast of the Weather from January to April. **6.30**, Weather Report. **6.35**, Popular Music on Gramophone Records. **7.0** (from **Bremen**), Concert in Aid of the Bremen Winter Relief Fund, relayed from the Casino; the Municipal Orchestra and Soloists: Erna Krull-Lange, Herbert Ernst Groh, Erwin Bedt, Bernhard Jakschtat, and Willy Hagen: Overture, The Merry Wives of Windsor (Nicolai); Rondo of the Golden Calf from Faust (Gounod); Kleines Vorspiel einer musikalischen Komödie (Platen); Mimi's Song from La Bohème (Puccini); Hungarian March from The Damnation of Faust (Berlioz); Frühlingsreigen (Fleischmann); Overture, Der Freischütz (Weber); Overture, Die schöne Galathee (Suppé); Song from Der arme Jonathan (Millöcker); Prelude to Eva (Lehar); Spring Song (Gounod); Waltz, Wiener Blut (Joh. Strauss); Ballet Music from Tatiana (Lehar); Song from The Count of Luxembourg (Lehar); Ballgeflüster (Meyer-Helmund); Song from Der Bettelstudent (Millöcker); Der Norag Marsch (Platen). **9.0**, Time and News. **9.20**, Topical Talk. **9.30**, Concert by the Chamber Orchestra, conducted by Gerhard Maasz; Soloists: Gerhard Gregor, Richard Beckmann, and Bruno Micksche. In the interval at **10.20**, Ice Report.

HANOVER.—See **Hamburg.**

HEILSBERG

276.5 metres; 60 kW; and **DANZIG, 453.2 metres.—12.5 p.m.**, Gramophone Concert: March, Per aspera ad astra (Urbach); Dornröschens Brautfahrt (Rhode); Tin Soldiers (Koekert); Buddhas Liebesfeier (Kronberger); Kirschblütenfest (Dieker); Memories of the Ukraine (Ferraris); Roses from the South (Joh. Strauss); March, Schneidige Truppe (Lehnhardt); Träumen in der Geige (Kaper); My Heart is yours (Ralton); Auf den Feldern blüht der rote Mohn (German); Am Lagerfeuer (Siede); Wiener Schwalben (Schlögel); Anno dazumal (Morena); Wenn ich traurig bin (Reisfeld); Träume mein Baby (Reisfeld); Wallburger Klarinettenhändler; Zugspitzenländler; Das ist Wien. In the interval at **12.20 p.m.**, News. **1.30**, Sponsored Programme with Gramophone Records. **2.0**, Agricultural Prices and Exchange Rates. **2.30** (from **Danzig**), Handwork for Children. **3.0**, Concert by the Small Station Orchestra, conducted by Eugen Wilcken. Overture, Im Hochland (Gade); Malaguena (Moszkovsky); La Toupie (Gillet); Waltz, Wiener Bonbons (Joh. Strauss); Selection from Die Schneider von Schönau (Brandt-Buys); Suite from Un bal costumé (Rubinstein); The Kiss Serenade (Micheli); Kisses in the Dark (Micheli); Waltz, Sorgenbrecher (Joh. Strauss, sen.); Selection from Boccaccio (Suppé). In the interval at **4.0** (approx.), Humorous Topical Review. **5.0**, Programme Announcements. **5.10**, Programme Announcements in Esperanto. **5.15**, Agricultural Prices. **5.20**, Ice Report. **5.30**, World Market Prices. **5.45**, Talk: Reading between the Lines in the Commercial World. **6.15**, Talk: Popular Art in East and West Prussia. **6.50**, Weather and News. **7.0**, Transmission for all German Stations. Address by Reichskanzler Adolf Hitler. **8.15** till Close Down, See **Berlin (Witzleben). 11.30** (approx.), Close Down.

HILVERSUM

Announced **HUIZEN, 296.1 metres**; 20 kW (7 kW up to **4.40 p.m.**).—**11.55 a.m.** till Close Down, Programme of the Catholic Radio Society (K.R.O.). **11.55**, Concert by the K.R.O. Sextet: Military March (Schubert); Wiegenlied (Schumann); Pesther-walzer (Lanner); Lenz (Hildach); Lehár Potpourri (Geiger); Czardas (Grissmann); Gramophone Records: Selection from Gri Gri (Lincke); Prelude (Rachmaninov); Waltz, Danilo (Lincke); March (Grit). **1.25 to 1.40 p.m.**, Interval. **1.40**, Talk for Young People. **2.10**, Programme for Children. **3.40**, H.J.R.O. Programme. **4.40**, Concert by the Mouth Organ Septet. **4.50**, Sports Talk. **5.5**, Concert by the K.R.O. Orchestra, conducted by M. van 't Wond. Marche lorraine (Ganne); Melody from Les Saltimbanques (Ganne); Extase (Ganne); La Zingara (Ganne). **5.30**, Concert by the Mouth Organ Septet (contd.). **5.50**, Concert by the K.R.O. Orchestra (contd.): Der Tausendkünstler (Blankenburg); San Lorenzo (de Silva); March, Stars and Stripes (Sousa). **6.0**, Press Review. **6.20**, Concert by the K.R.O. Orchestra (contd.): Six Pieces (Lincke): (a) Folies Bergères, (b) Overture, Im Reich des Indra, (c) Waltz from Gri-Gri, (d) Am Bosporus, (e) Die Backfischparade, (f) Anina. **6.50**, Legal Talk. **7.10**, Police Notes. **7.25**, Sports Notes. **7.40**, Concert by the K.R.O. Boys. Soloist: J. Mossel (Songs). **8.10**, News. **8.15**, Concert by the K.R.O. Boys (contd.). **8.55**, Talk. **9.10**, Concert by the K.R.O. Boys (contd.). **9.40**, Light Music on Gramophone Records. **11.40** (approx.), Close Down.

HORBY.—See **Stockholm.**

HUIZEN

Announced **HILVERSUM, 1,875 metres**; 8.5 kW.—**11.40 a.m.** till Close Down, Programme of the Workers' Radio Society (V.A.R.A.). **11.40**, Orchestral Concert; Soloist, L. Fuld (Songs): Melody from Les Cloches de Corneville (Planquette); Du hast mir heimlich die Liebe ins Haus gebracht (Heymann); Barcarolle (Arensky); Czardas (Nicklas-Kempner); Ich hab' ein Herz, dasz nach Liebe sich sehnt (May-Pruis); Le petit Berger (Debussy); Gramophone Records; Overture, Marinarella (Fucik); Selection from The Merry Widow (Lehár); Suite romantique (Armandola); Cigány Melodies (Borganov); Frühling in Wien (Stolz); Gramophone Records; A Scandinavian Honeymoon (Frederiksen); Für dich sing ich mein Lied (Lehár); Wedding Day on Troldhangen (Grieg). **1.40 p.m.**, Interval. **1.55**, Light Music on Gramophone Records. **2.30**, Concert: Rund um die Volga (Borchert); Wo die Wälder grün sind (Brodzsky); Austrian Peasant Dances (Pachernegg); Two Guitars (Horlick); Paso lento (Meldi); Quand l'amour meurt (Crémieux); Melody (Bianco); Ja so ein Liebespaar, ist das nicht sonderbar (Gilbert); Gramophone Records; Potpourri, Wir tanzen (Kernbach); Marionettenbranzing (Rathke); Oft hab' ich vom Glück geträumt (Kálmán); Lawd, you made the night too long (Young); Nur du bist schuld daran (Stransky); Ein Freund, ein guter Freund (Heymann); Gramophone Records; Was der Wald erzählt (Zimmer); Tee bei Maikäfern (Noack); Le baiser (de Micheli); Temptation Rag (Lodge); Ich bin von Kopf bis Fuss auf Liebe eingestellt (Hollaender); March of the Dwarfs (Armandola); Lass mich einmal deine Carmen sein (Hollaender). **4.10**, Talk. **4.25**, Talk on Music. **5.20**, Literary Talk. **5.40**, Choral Concert and Talk. **6.10**, Recitation. **6.40**, V.R.O. Programme. **7.40**, Talk: The Musical Competition. **8.0**, The Village Barber. **8.15**, Songs by M. Barger: Mattinata (Tosti); Souvenir (Eysler); Chanson de vin (Brammer). **8.30**, Popular Music on Gramophone Records. **9.0**, Address. **9.10**, Songs (contd.): Te Quiero; Morenita mia (Stubbs); A little girl, a little boy, a little moon (Barger); Spring (Witte). **9.25**, News. **9.40**, Concert by the Small Station Orchestra, conducted by M. Dinchant; Soloists: J. Jong (Organ), A. de Booy (Baritone), J. Huy (Saxophone), C. Steyn (Accordion), J. Carlquist (Hawaiian Guitar), R. Bennink (Drums), and J. Vogel (Pianoforte): Flieger grüss mir die Sonne (Gray); Mimi (Rodger); Japanese Bell Dance (Yoshitomo); Berceuse de Jocelyn (Godard); Saxophobia (Wiedoeft); Nadja (Michiels); The Liberty Bell (Sousa); Waltz from Ball in Savoy (Abraham); Rubenola (Wiedoeft-Frey); Sunny South (Bodewalt-Lampe); The Girls of Montparnasse (Wachsmann); Overture, Zampa (Hérold); Dinah (Shelton); Gloria (Hager-Ring); Ich liebe dich (Grieg); Ballet Music from Rosamund (Schubert); Wenn du liebst (Wreede); I'll do my best to make you happy (Noble); Tereso mio (Becucci); Chant d'amour (Gurwich); Potpourri, Chansons Krontjong; In a Toy Shop (Jessel); Russian Dance (Bortkiewicz); Marche lorraine (Ganne); Sax-O-Trix (Wiedoeft); Gnädige Frau (Heymann); Schön wares (Alex). **11.40** (approx.), Close Down.

INNSBRUCK.—See **Vienna.**

KALUNDBORG.—See **Copenhagen.**

KIEL.—See **Hamburg.**

KLAGENFURT.—See **Vienna.**

KOSICE.—See **Prague.**

LANGENBERG

473 metres; 60 kW.—**12 Noon**, Concert conducted by Wolf: Overture, Nakiris Hochzeit (Lincke); Suite, Beim Tanz der Nationen (Mannfred); Selection from The Hermit's Bell (Maillart); Salut d'amour (Elgar); Kálmán Potpourri, Fortissimo (Feigel); Potpourri, Auf wiederhören (Weninger); Waltz from The Gipsy Baron (Joh. Strauss). In the interval at **1.0 p.m.**, News. **1.35**, Popular Music on Gramophone Records. **2.30**, Economic Notes and Time. **2.50**, Musical Programme for Children. **3.10**, Book Review. **3.30**, English Reading. **4.0**, Choral Concert, relayed from **Essen**: Conductor, Bernhard Bittscheidt; Soloist, Karl Götz: Uraltes Lied (Kaun); Dämmerung (Kaun); Abendweise (Gatter); Der stille Hof (Siegl); Interlude: Liebe (Schubert); Das Dörfchen (Schubert); Türkisches Schenkenlied (Mendelssohn); Mein Schätzle ist fein (Othegraven). **5.20**, Talk for Women. **5.45**, Weather, Time, Economic Notes and Sports Results. **5.55**, Talk: Reviving Old Handicrafts. **6.20**, Topical Talk. **6.30**, Talk: Physical Training. **6.55**, News. **7.0**, See **Heilsberg. 8.20**, Concert by the Station Orchestra, conducted by Buschkötter. **9.30** (in the interval), News and Sports Notes. **9.45**, See **Stuttgart. 11.0**, Dance Music. **12 Midnight**, Close Down.

LAUSANNE.—See **Radio-Suisse Romande.**

LEIPZIG

389.6 metres; 120 kW; and **DRESDEN, 319 metres.—12.15 p.m.**, Gramophone Concert of Light Music, followed by Exchange Quotations. **1.0**, Wireless Notes. **1.30**, Programme for Children. **2.15**, Review of Periodicals. **2.45**, Economic Notes. **3.0 to 3.15**, Music Notes. **3.30**, Concert from **Berlin (Witzleben). 5.0**, Discussion: The German Student in Rome. **5.30**, German for Germans. **5.50**, Topical Talk. **6.0**, Talk: New Sources of Energy. **6.30**, Pianoforte Recital by Theodor Blumer: Minuet in G (Mozart); Scherzo in B Flat (Schubert); Valse-Impromptu (Liszt); Arabesque (Schumann); Prelude (Heller); Fantasia on Fledermans-Walzer (Strauss-Schütt). **7.0**, Programme for all German Stations, relayed from **Heilsberg. 8.15**, Concert by the Leipzig Symphony Orchestra, conducted by Willy Steffen: Overture in E Minor (Schubert); German Folk Dances (Hensel); Entr'acte and Ballet Music from Belcanto (Kormann); Waltz, Under der blühenden Linde (Gelleri); Im Volkston (Grieg); Kuhreigen und Bauerntanz (Grieg). **9.15**, News. **9.30** (approx.), Concert by the Leipzig Symphony Orchestra, conducted by Willy Steffen: Invitation to the Dance (Weber); Waltz, Junge Mädchen tanzen gern (Eysler); Festpolonaise (Priemer); March from Die Landstreicher (Ziehrer); Selection from Der Obersteiger (Zeller); Vermählungswalzer (Lanner); Moulinet-Polka (Jos. Strauss); Rosa-Röschen (Lincke); Overture, Die schöne Galathee (Suppé); Lolo-Quadrille (Lehar); Gondoliera and Perpetuum mobile from Suite No. 3 (Ries). **11.0** (approx.), Close Down.

LINZ.—See **Vienna.**

MADRID

ARANJUEZ (EAQ); 30.43 metres; 20 kW.—**6.0 to 8.0 p.m.**, Programme for Listeners in the Canary Islands, Guinea and America. **6.0**, Popular Concert. **7.15**, Talk. **7.30**, Dance Music. **8.0 to 10.30**, Interval. **10.30**, Variety Music. **10.45**, Radio Chronicle. **11.0**, Variety Music (contd.). **11.35**, Talk. **11.40**, Light Music. **12.0 Midnight** (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 424.3 metres; 2 kW. **7.0 p.m.**, Chimes; Exchange and Request Gramophone Records. **7.30**, Talk on the Co-operative Movement, and Request Gramophone Records (contd.). **8.15**, News. **8.30 to 9.0**, Interval. **9.0**, English Lesson by the Linguaphone Method. **9.30**, Chimes, Time and Transmission of a Musical Comedy. **11.45**, News Bulletin. **12.0 midnight**, Chimes and Close Down.

MALMO.—See **Stockholm.**

MILAN.—See **Turin.**

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—**5.25 p.m.**, Popular Concert, conducted by J. Subert. **6.0**, See **Prague. 6.25**, See **Brno. 6.55**, See **Prague. 8.0**, See **Bratislava. 9.0**, See **Prague. 9.15**, Concert of Light Music by the Station Orchestra, conducted by J. Plichta. **10.30** (approx.), Close Down.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—**4.30 p.m.**, Concert of Music by Glinka and other Russian Composers. **5.30**, Wagner Concert by the Symphony Orchestra, Choir, and Soloists, relayed from the Radio Theatre. **8.0**, Talk in French on Social Insurance.

MOTALA.—See **Stockholm.**

MUHLACKER.—See **Stuttgart.**

MUNICH

533 metres; 1.5 kW. Relayed by **Augsburg**, and **Kaiserslautern, 560 metres**, and **Nürnberg, 239 metres.—3.10 p.m.**, Concert conducted by Erich Kloss. Petersburger Schlittenfahrt (Eilenberg); Overture, The Betrothal by Lanternlight (Offenbach); Two Pieces (Noack): (a) Die Spieluhr der Pompadour, (b) Babys Soldat; Bavarian Ländler; Potpourri (Daxenberger); Modern Ballet Suite (Armandola); Intermezzo, Ein Flanderstündchen (Wismar); March, Vom Bodensee zum Nordseestrand (Steinbeck). **4.30**, Wireless Notes. **4.45**, Programme for Young People. **5.15**, The Georgian Chant—Talk, with Illustrations by the Munich Cathedral Choir. **5.50**, Talk: Old Bavaria's Dream of Gold. **6.10**, Wireless Notes. **6.25**, Concert by a Mandoline Double Quartet. Soloist: Edi Kiem (Zither). **7.0**, Programme to be announced. **8.15**, Concert by the Wireless Orchestra, conducted by Karl List. Soloists: Margret Langen (Contralto) an Anton Walter (Cello). Overture, Titus (Mozart); An die Hoffnung, for Contralto and Orchestra (Beethoven); Concerto in B Flat for 'Cello and Orchestra (Boccherini); Weihe der Nacht, for Contralto and Orchestra (Reger); Overture, Scherzo and Finale (Schumann). **9.20**, Time, Weather, News and Sports Notes. **9.45**, Serenade, conducted by Erich Kloss. **11.0** (approx.), Close Down.

NAPLES.—See **Rome.**

NOTODDEN. See **Oslo.**

OSLO

1,083 metres; 60 kW. Relayed by **Fredrikstad, 365.8 metres; Hamar, 574.7 metres; Notodden, 477 1 metres; Porsgrund, 453.2 metres**; and **Rjukan, 447.1 metres).—4.15 p.m.**, Programme for Children. **5.15**, Song and Hardanger Fiddle Recital of National Music. **5.45**, Talk on Economics. **6.0**, Announcements, Weather and News. **6.30**, Talk. **7.0**, Time. **7.1**, Finmarken Programme, relayed from the Hall of Commerce. **8.40**, Weather and News. **9.15**, Concert by the Station Orchestra: Selection from The Merry Widow (Lehár); Selection from The Bird Fancier (Zeller); Two Songs from Die Bajadere (Kálman); Tell me To-night (Spolansky); Potpourri, Die Walzer der Welt (Rotzrecht); Casapova March (Lincke). **10.15**, Dance Music. **11.0** (approx.), Close Down.

OSTERSUND.—See **Stockholm.**

PALERMO

542 metres; 3 kW.—**7.0 p.m.**, Popolavoro Notes, Tourist Report, Agricultural Notes,

and Giornale Radio. 7.20, Sports Notes. 7.30, Time and Announcements. 7.35, Popular Music on Gramophone Records. 7.45, A Waltz Dream—Operetta in Three Acts (O. Straus). In the intervals, Book Review and Announcements. After the Operetta, News.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW.—Time Signals (on 2,650 metres), at 9.26 a.m. and 10.25 p.m. (Preliminary and 6-dot Signals).—5.45 p.m., Le Journal Parlé. 7.30, Dramatic Programme: Part I The Man who Married a Dumb Wife (Anatole France). Part II Three Farces: (Georges Courteline): (a) L'honneur des Brossarbourg. (b) L'Ours. (c) Vingt-six. 9.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—6.45 p.m., Journal Parlé. 7.0, Concert of Light Music on Gramophone Records. 8.0, Talk: The Event of the Week. 8.5, Theatre Notes. 8.15, Interval. 8.30, Dramatic Programme. 9.0, Interval. 9.10, Dance Music by the Sonora Band, conducted by Fred Hoffmann. 11.0, Dance Music on Gramophone Records. 12 Midnight (approx.), Close Down.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Light Music on Gramophone Records. 8.0, Press Review and Weather. 9.0, Concert by the Conservatoire Concert Society, relayed from the Old Conservatoire. 12 Noon, Concert by the Radio Paris Orchestra: Suite funambulesque (Messager); Selection from Merrie England (German); Travel Memories (Albéniz); Alsatian Dances (Levadé); Italian Rhapsody (Mezzacapo); Scènes rustiques (Gillet); Ukrainian Suite (Rubinstein). In the intervals at 1.0 p.m., Exchange, News, and Weather; and at 1.30, Exchange. 2.0, Exchange. 3.0, Programme for Children. 3.45, Exchange and Market Prices. 3.50, Dance Music by the Radio Paris Orchestra. 6.30, Market Prices, Weather, Agricultural Report, and Exchange. 7.0, Legal Talk. 7.15, Agricultural Talk. 7.45, Commercial Prices, News, and Review of the Latin Press. 8.0, A Radio Tour, conducted by René Dorin. 8.30, News and Weather. 8.45, A Revue by Moriss, with the Collaboration of the Little Gisèle Parry. 9.15, Press Review and News. 9.30, Gramophone Dance Music: Turkish Patrol (Michaelis); Futuristic Rhythm (McHugh); Foxtrot, The Blue Bird (Penso); Tango (Guichandout); Schottische (Baza); Tango, Comadre (Filiberto); Foxtrot, Miami (Learsi); La Java des Rigolos (Vacher); Tango (Jekyll); La Valse des As (Delacour); Foxtrot, Harlem Madness (Ager); Waltz, Monte Cristo (Kotlar); Tango, Barrio Reo (Fugazot); Onestep, Frère Jacques (Raiter); Quadrille, The Lancers (Metra).

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW. Relayed by **W8XK** on **48.86 metres** and **25.27 metres.**—9.0 p.m., Dance Masters, from **New York.** 9.30, Concert Favourites, from **New York.** 10.0, Rhythmic Interlude. 10.30, Weather Report. 10.32, Behind the Law—Tales of the Pennsylvania State Police. 10.45, Little Orphan Annie, from **New York.** 11.0, Little German Band. 11.30, Time Signal. 11.31, Temperature Report. 11.32, Teaberry Sport Review. 11.37, Press News Reeler. 11.42, Strange Facts. 11.44, Weather Report. 11.45, A Recreo by Bill and Alex of the Downtown Y.M.C.A. 11.59, Time Signal. 12 Midnight, Fields and Hall, from **New York.** 12.15 a.m. (Sunday), Atkinson String Ensemble. 12.30, KDKA Players. 1.0 to 4.0, **New York** Relay. 1.0, American Taxpayers' League. 1.15, The Boston Symphony Orchestra. 3.15, Salon Singers. 3.30, Cuckoos. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.13, KDKA Artist Bulletin. 4.15, Press Last-minute News. 4.20, Messages to United Presbyterian Missionaries. 5.20, Messages to Dwellers in the Far North.

PORSGRUND.—See **Stockholm.**

PRAGUE

488.6 metres; 120 kW.—3.10 p.m., See **Bratislava.** 4.10, Talk on Economics. 4.20, Czech Lesson for Germans and German Lesson for Czechs. 4.50, Variety Music on Gramophone Records. 5.5, Agricultural Talk. 5.15, Talk for Workers. 5.25, News in German. 5.30, German Transmission: Musical Programme for Children. 6.0, Chimes from the Church of St. Loudmila, Kralovske-Vinohrady. 6.0, News. 6.10, Talk. 6.25, See **Brno.** 6.55, The Three Musketeers—Revue in Three Scenes (Jurist). 8.0, Time Signal. 8.1, See **Bratislava.** 9.0, Time Signal. 9.1, News Bulletin. 9.15, See **Moravská-Ostrava.** 11.0 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; **LAUSANNE, 680 metres;** and **GENEVA, 760 metres.**—6.0 p.m. (from **Geneva**), Weather, News and Announcements. 6.30 (from **Geneva**), Film Talk. 7.0 (from **Lausanne**), Accordion Duets. 7.15 (from **Lausanne**), Lausanne en bombe—Revue, relayed from the Théâtre Bel-Air. 8.50 (approx.) (in the interval), News and Weather. 10.45 (approx.), Close Down.

RJUKAN.—See **Oslo.**

MARCH 4th SATURDAY *continued*

ROME

Call 1RO, 441 metres; 50 kW. Relayed by **Naples, 319 metres,** and **2RO, 25.4 metres.**—7.0 a.m., Gymnastics. 7.15 to 7.30, Weather and Announcements. 11.30, Weather and Light Music on Gramophone Records. 12 Noon, Time and Announcements. 12.2 to 1.15 p.m., Orchestral Concert: Castles in the Air (Sadun); First Suite of Waltzes (Rohrecht); Bells (Liadov); Sunny Skies (Rose); Selection from Die Bayadere (Kálmán); Hawaiian Guitar Solo: Onda (Carducci); Serenata agli sposi (De Nardis); Fantasia for Pianoforte (Journaus); Moonlight on the Riviera (Gilbert); Three Soldiers (Escobar). In the interval from 12.30 to 12.45, Giornale Radio and Exchange. 3.45, Children's Radio Review and Talk for Young People. 4.0, Exchange, Announcements, Report of the Royal Geographical Society, and Giornale Radio. 4.15, Reading. 4.30 to 5.15, Orchestral Concert: Overture, Martha (Flotow); Du und Du (Stolz); Selection from La Wally (Catalani); Amor mio (Calendrini); Serenata spagnola (Grieco); Selection from Frühlingsluft (Jos. Strauss); Meditation (Manno); Madrid (Alex). 6.0 (**Naples**), Shipping and Sports Notes. 6.10, Lesson in Morse. 6.20, Giornale Radio and Agricultural Report. 7.0, Time, Announcements, and Light Music on Gramophone Records. 7.45, Relay from a Theatre. In the intervals, Review of New Books, Talk, and News.

SALZBURG.—See **Vienna.**

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 379.5 metres; 50 kW. Relayed at intervals by **W2XAF** on **31.48 metres** and by **W2XAD** on **19.56 metres.**—12 Midnight, Soloist, from **New York.** 12.15 a.m. (Sunday), Stock Reports. 12.30, Hotel New Yorker Orchestra, from **New York.** 12.45, James G. McDonald: The World To-day. 1.0, Lady Fingers (Pianists). 1.15, Bernard Silberg (Cellist). 1.30, The Economic World To-day, from **New York.** 2.0, The Blue Danube, from **New York.** 2.30, Oldsmobile Programme by George Olsen's Orchestra, from **New York.** 3.0, Lucky Strike Hour and Programme Résumé.

SCHWEIZERISCHER LANDESSENDER

BEROMUNSTER, 459 metres; 60 kW.; **BASLE, 244.1 metres;** and **BERNE, 245.9 metres.**—11.28 a.m., Time Signal from Neuchâtel Observatory. 11.30, Weather and News. 11.40, Popular Music on Gramophone Records. 12.35 p.m., Weather and Exchange. 12.45 (from **Berne**), Answers to Correspondence. 1.0 (from **Berne**), Review of New Books. 1.30 (from **Berne**), Recital of Etudes and Sonatinas by Famous Pianists, reproduced by Willy Girsberger. 1.50 (from **Berne**), Folk Songs, sung by Schoolgirls. 2.10 (from **Berne**), Talk: The Welfare of Caged Birds. 2.30 (from **Berne**), Chess Lesson. 3.0 (from **Berne**), Popular Accordion Concert. 3.30 (from **Berne**), Medical Talk: The Nervous System. 3.45 (from **Berne**), Talk: Insurance Questions. 4.0, Weather. 4.5 to 5.30, Interval. 5.30 (from **Basle**), Programme for Children. 6.0, Time and Chimes from the Zürich Churches, followed by Weather and Market Prices. 6.15 (from **Basle**), Talk: Johann Friedrich Cotta—Goethe's Publisher. 6.45 (from **Basle**), Concert of Seventeenth- and Eighteenth-Century Music. Lotte Jenny (Soprano), Ernst Vogel (Flute), Marguerite Gutknecht (Violin), Paul Ganzoni (Viola da Gamba), and Ernst Sigg (Harpsichord). 8.0 (from **Basle**), Carnival Programme. 8.30, Weather and News. 8.40, Dance Music and Cabaret Programme on Gramophone Records. 10.0 (approx.), Close Down.

SOTTENS.—See **Radio-Suisse Romande.**

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by **Boden, 1,229.5 metres; Goteborg, 322 metres; Hörby, 257 metres; Motala, 1,348 metres; Ostersund, 770 metres;** and **Sundsvall, 542 metres.**—4.5 p.m., Popular Music on Gramophone Records. 5.0 (from **Boden**), Sports Notes. 5.30, Variety Programme. 6.15, Weather and News. 6.30, Old Dance Music. 7.15, Talk: The Primeval Forests of Brazil. 7.45, Orchestral Concert: Carnival Overture (Dvorák); Airs (Reger): (a) Pierrot and Pierrette. (b) Harlequin. (s) Liebeswalzer; Selection from Die Faschingsfee (Kálmán); Melody (Clemus); Butterfly Intermezzo (Schlenk); Carnaval à Paris (Svendsen). 8.45, Weather and News. 9.0, Dance Music. 10.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30 a.m., Orchestral Concert, conducted by Maurice de Villers. Overture, Hans Heiling (Marschner); Symphonic Poem, Le Rouet d'Omphale (Saint-Saëns); Selection from Boris Godunov (Mussorgsky); Erotica (Grieg); Ich liebe dich (Grieg); Italian Caprice (Tchaikovsky); Suite algérienne (Saint-Saëns). 12.45 p.m., News. 1.0, Time Signal and Exchange Quotations. 1.5, Light Music on Gramophone Records. 2.0, Dance Music on Gramophone Records. 3.0 to 3.45, Interval. 3.45, Music Talk in French: Johannes Brahms and his Work. 4.0, Modern Music on Gramophone Records. Extracts from (a) L'Heure Espagnole (Ravel) and (b) Judith (Honegger). 4.45, Legal Talk in German. 5.0, Pasdeloup Symphony Concert, relayed from the Théâtre des Champs Elysées, Paris. 7.0, French Lesson. 7.15, Horticultural Talk in German. 7.30, Time and News. 7.45, Lottery Results. 8.0, Chamber Music by the Théophile Soudant Quartet. Quartet (Haydn); Quartet (Schumann); Quartet (Ravel). 10.0, Orchestral Concert, relayed from the Café Moll, Mulhouse. Overture, The Thieving Magpie (Rossini); Transaktionen-Walzer (Jos. Strauss); Ballet Music from Coppelia (Delibes); Selection from The Tales of Hoffmann (Offenbach); Tes yeux (Bonmecontre); Marche des Marcheurs (Cabrol). 11.0, Concert by the Jean Clerene Quintet, relayed from **Radio Colonial, Paris, 25.63 metres.** 12.0 Midnight (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and **FREIBURG, 570 metres.**—11.20 a.m., Song Recital. 11.50, Wind Instrument Concert on Gramophone Records. 12.30 p.m., Concert from **Langenberg.** 1.30, Time, Weather, News and Programme Announcements. 1.45, Anecdotes and Funny Stories. 2.10, Talk on Flowers. 2.30, Programme for Children. 3.30, Gramophone Concert. Five-o'Clock Tea with Robert Stolz (Dostal); Arabian Fairytale (Schumacher-Emmel); Russian Foxtrot, Schwarze Katharina (Weiss-Schwarz); Foxtrot, Ich will nicht wissen, wer du bist (Stolz-Marischka); Foxtrot, Wenn du nicht kommst, dann haben die Rosen umsonst geblüht (Heymann-Gilbert); Foxtrot, Love is the sweetest Thing (Noble); Tango, Wenn ich Rosen seh' (Reisfeld-Intrator-Marbot); Foxtrot, Warum bin ich verliebt in dich? 4.0, Choral Concert. Part I, relayed from **Gerstetten**: O wonderschöne Frau (Wengert); Innsbruck, ich muss dich lassen (arr. Hugo Jüngst); Madrigal (di Lasso-Hirsch); Am Bergstrom (Köllner); Mütterliebchen (Arnold); Baskenkind (Süssmuth); Corsairs' Song (Baumann). Part II, relayed from **Magstadt**: Morning Song (Gade): Ein Stündlein wohl vor Tag (Moldenhauer); Madrigal: Der Strahl der Frühlingssonne (arr. Nagel); Zur Sonne (Löffler); D'r Hirschwirt (Kromer); Abendtrunk (Nagel); Verlassen (Süssmuth); Zauber der Nacht (Kreutzer); Der Nachtwandler (Rinkens); Der Brief (Süssmuth). 5.15, Time and Sports Notes. 5.25, Talk: The Theatre in Berlin and throughout Germany. 6.0, President Roosevelt takes Office—a Radio Report in German, relayed from **New York.** 6.20, Time, News and Weather. 6.35 (from **Freiburg**): Recital of Baden Folk Songs. 7.0, Adolf Hitler's Speech, relayed from **Königsberg.** 8.15 (from **Freiburg**), L'arbre enchanté—Comic Opera in One Act (Gluck). 9.35, Time, Weather, News and Programme Announcements. 9.55, Concert of Old-Time Dances, by the Station Orchestra, conducted by Gustav Görlich. 11.0 (approx.), Close Down.

SUNDSVALL.—See **Stockholm.**

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—6.0 p.m., News. 6.15, Music by an Argentine Orchestra. 6.30, Chansonettes. 6.45, Le couronnement de la muse du peuple (Charpentier), by the Symphony Orchestra. 7.0, Opera Music: Airs from: (a) Così fan tutti (Mozart). (b) Tosca (Puccini). (c) I Pagliacci (Leoncavallo). (d) Romeo and Juliet (Gounod). 7.15, Racing Results and News. 7.25, Local News. 7.30, Accordion Music. 7.45, Orchestral Music: Selection from The Chocolate Soldier (O. Straus); Two Symphonic Movements (Merrick); Im Reich des Indra (Lincke); Melody (Warlock); Humoresque (Dvorak). 8.15, Operetta Music. 8.30, Music by a Viennese Orchestra. 9.0, Extracts from Lakmé Opéra-Comique (Delibes). 10.0, Light Music. 10.15, North-African News. 10.30, Concert for Listeners in Morocco: Hungarian Rhapsody, No. 2 (Liszt); Waltz and Song from Faust (Gounod); The Merry Blacksmiths (Meissier); Tu sais (Lenoir); Selection from Johnny spielt auf (Krenek). 11.0, Popular Concert: Aria from Faust (Gounod); Tango (Bottero); Jealousy (Gade); Autumn Roses; Air from Manon (Massenet); Melody (Halet); Tango. 11.30 to 12 Midnight, Programme in English by the I.B.C. The I.B.C. Half Hour, Mr. H. K. Hitchcock announcing. Mona Lisa from Bow Bells; I certainly don't need you; It was only somebody's daughter; Sweet Sixteen; We just couldn't say Good-bye; Phil the Fluter's Ball; Miss Hooligan's Christmas Cake; Balls, Picnics and Parties. 12 Midnight, Weather and Announcements. 12.5 a.m. (Sunday), Musical Programme. 12.30 (approx.), Close Down.

TRIESTE

247.7 metres; 10 kW.—4.10 to 6.0 p.m., See **Turin.** 6.0, Light Music on Gramophone Records. 6.20 to 6.35, See **Turin.** 6.35, Concert of Richard Strauss Music with Commentary. Songs of the Orient. Op. 77. 7.0 till Close Down, See **Turin.**

TRONDHEIM.—See **Oslo.**

TURIN

273.7 metres; 7 kW. Relayed by **Milan, 331.5 metres; Genoa, 312.8 metres;** and **Florence, 500.8 metres.**—4.10 to 5.0 p.m., Dance Music from the Savoia. 5.35, Giornale Radio, Agricultural and Dopolavoro Notes. 6.0, Gramophone Records of Variety Music. In the intervals at 6.20, Giornale Radio, and at 6.30, Time, Announcements and Tourist Report. 7.0, Giornale Radio, Weather and Gramophone Records (contd.). 7.30, Talk: Events and Problems. 7.45, Variety Programme. In the interval, Review of New Books. 9.0, Orchestral Concert. 10.0, Giornale Radio.

VATICAN CITY

19.84 metres (Morning) and **50.26 metres (Evening);** 10 kW.—10.0 to 10.15 a.m., Religious Announcements in Different Languages. 7.0 to 7.15, Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by **Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 245.9 metres;** and **Salzburg, 218.5 metres.**—4.25 p.m., Concert by the Karl Pauspertl Orchestra. 6.0, President Roosevelt takes up Office—Radio Report of the Celebrations, relayed from **America.** 6.20, Talk on Karl Glossy for his Eighty-Fifty Birthday. 6.45, Maxim. 6.50, Time, Weather, Sports Notes, and Programme Announcements. 7.0, Misalliance Comedy in Three Acts (Bernard Shaw), translated by Siegfried Trebitsch. 9.10, News, Weather, and Announcements. 9.25, Dance Music by the Heinz Branca Jazz Band, relayed from the Café Palmhof.

WARSAW

1,411 metres; 120 kW.—10.58 a.m., Time Signal and Bugle Call from the Tower of St. Mary's Church, Cracow. 11.5, Programme Announcements. 11.10, Variety Music on Gramophone Records. 12.10 p.m., Weather Forecast. 12.15, Educational Programme, relayed from **Lwow, 381 metres.** 12.55 to 2.10, Interval. 2.10, Announcements. 2.15, Economic Notes. 2.25, Military Report. 2.35, Programme for Children, relayed from **Wilno, 563 metres.** 3.0, Light Music on Gramophone Records. 3.40, Talk on Wyspianski, relayed from **Wilno.** 4.0, Divine Service, relayed from the Ostra Brama, **Wilno.** 5.0, Programme Announcements. 5.5, Concert of Light Music, relayed from the Café Adria. In the interval, News. 6.0, Miscellaneous Items. 6.20, Gardening Talk. 6.30, Topical Talk. 6.45, Radio Journal. 7.0, Concert by the Radio Orchestra, conducted by S. Navrot. Soloist: Ida Los (Musical Saw). Polonaise, The Good Old Times (Maszynski); Overture, Chal Romano (Ketelbey); Ballet Scene, Harlequin in Love (Meyer-Helmund); Musical Saw Solos: (a) Je l'ai aimé (Rachmaninov). (b) L'amour c'est une plaisanterie (Blaire). (c) Song from Wild Violets (Stolz); Humorous Items; Romantic Suite (Armandola); Burlesque-Intermezzo (Culotte); Jubel-walzer (Strauss); Serenade (Titl); Songs: (a) Air (Grothe), (b) Mister Brown (Abraham). (c) Waltz (Brown); Potpourri, Dividenden (Morena); Blumengefluster (von Blon); Die kleine kompagnie (Ganglberger). In the interval, Sports Notes and Radio Journal. 9.5, Chopin Pianoforte Recital by M. Smidowicz and Urstein. Fantasia in A on Polish Airs; Ten Preludes: (a) in B Minor, (b) in D, (c) in E Flat Minor, (d) in D Flat, (e) in B Flat Minor, (f) in A Flat, (g) in F Minor, (h) in E Flat, (i) in C Minor, (j) in D Minor. 9.40, Talk: Slovak Castles in Legend and Story. 9.55, Aviation Weather Report and Police Notes. 10.0, Dance Music from the Bodega Dance Hall. In the interval at 10.30, News for Members of the Polish Polar Expedition, relayed from **Lwow.**

ZURICH.—See **Schweizerischer Landessender.**

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E.L.S.5.	40 a/h capacity	11/-
E.L.S.7.	60 a/h capacity	12/6
E.L.S.9.	80 a/h capacity	15/6
E.L.7.	60 a/h capacity	10/3
E.L.9.	80 a/h capacity	12/3

Balanced Capacity is the newest development in accumulator manufacture. It means that the positive and negative plates are designed to function in exact electrical balance, making it possible to charge more quickly and discharge more slowly without damaging the cell. The Ediswan "Extra-life" accumulator will thus last longer and give you much better service than an ordinary unbalanced type—yet it costs no more. A definite economy.

FROM ALL GOOD RADIO DEALERS

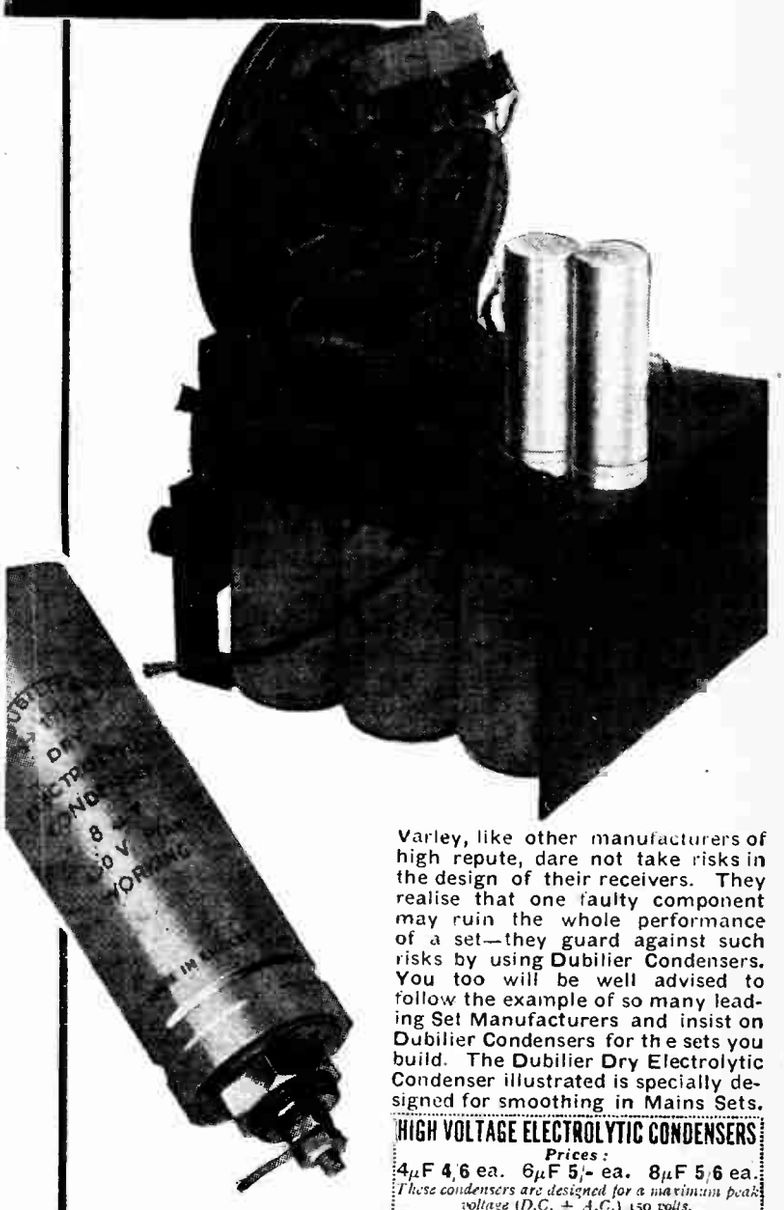
EDISWAN EXTRA LIFE ACCUMULATORS

THE EDISON SWAN ELECTRIC CO. LTD.
PONDERS END, MIDDLESEX

EDISWAN-the Better Service Batteries

B.228

Dubilier Condensers chosen by Varley for dependability



Varley, like other manufacturers of high repute, dare not take risks in the design of their receivers. They realise that one faulty component may ruin the whole performance of a set—they guard against such risks by using Dubilier Condensers. You too will be well advised to follow the example of so many leading Set Manufacturers and insist on Dubilier Condensers for the sets you build. The Dubilier Dry Electrolytic Condenser illustrated is specially designed for smoothing in Mains Sets.

HIGH VOLTAGE ELECTROLYTIC CONDENSERS

Prices:
4μF 4/6 ea. 6μF 5/- ea. 8μF 5/6 ea.
These condensers are designed for a maximum peak voltage (D.C. + A.C.) 450 volts.

DUBILIER CONDENSERS

E7

DUBILIER CONDENSER CO. (1925) LTD.
Ducon Works, Victoria Road, North Acton, London, W.3

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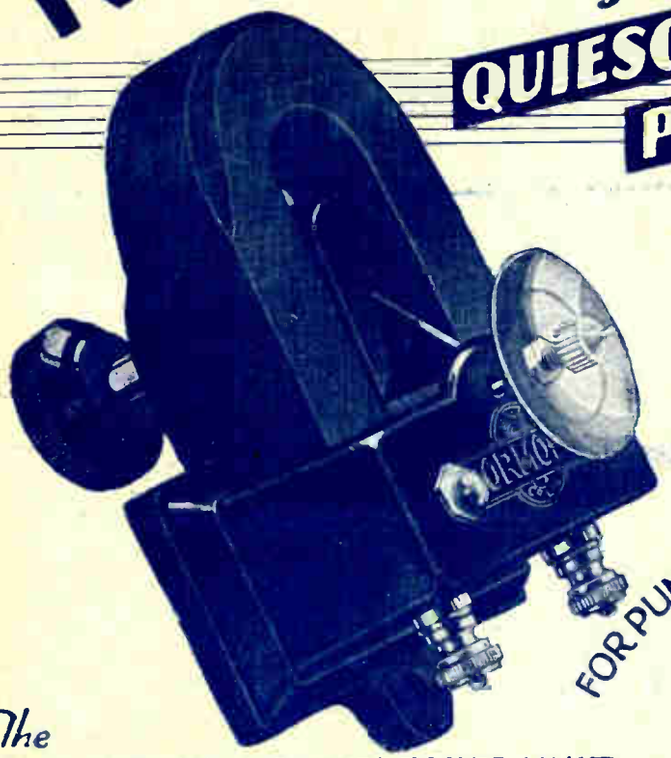
NOW ORMOND LOUDSPEAKERS

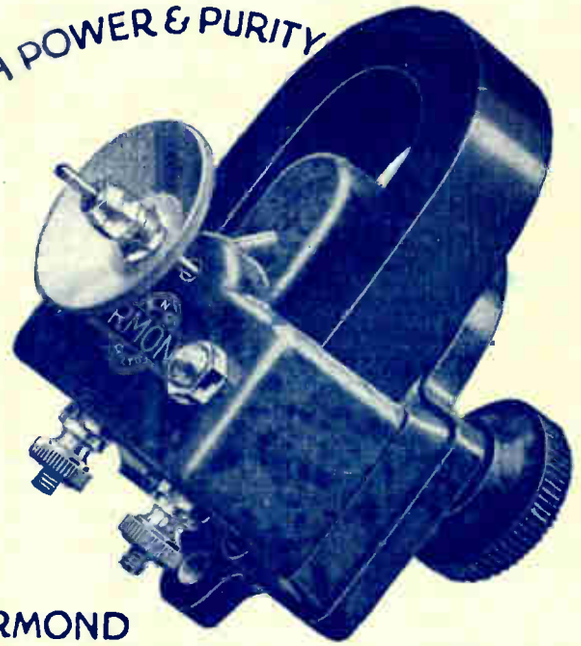
for use with

QUIESCENT PUSH-PULL OUTPUT



These Ormond Loudspeakers are provided with three terminals. Connection should be made directly to the output of the receiver, no output transformer or choke being required. They may also be used in conjunction with straight receivers in which case connection is made to two terminals in the usual manner.

FOR PUNCH POWER & PURITY

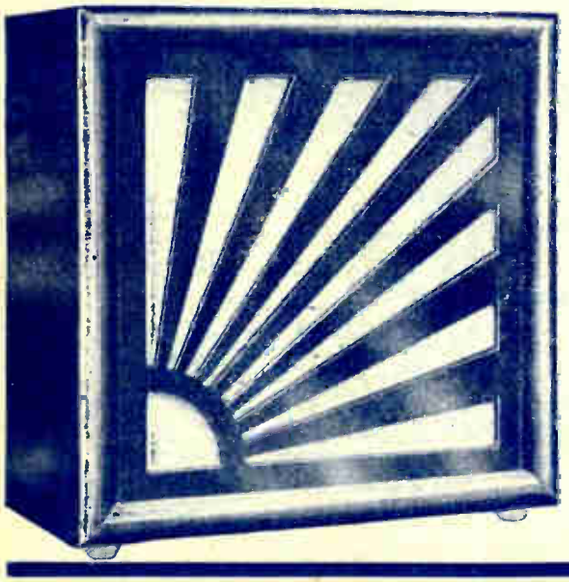


The ORMOND No1 LOUDSPEAKER UNIT

A very large cobalt magnet is used to ensure faithful reproduction and sensitivity. This unit is capable of handling great volume without a trace of chatter. The three terminals are heavily nickel plated.
Cat. No. R/450 C.T.

Model No. 1.Z. Specially adapted for use with High Efficiency Pentode Valves and may be connected directly in the anode circuit. To distinguish this model the terminals are copper oxidised. Cat. No. R/450Z

12/6 Either Model



The ORMOND "*Popular*" LOUDSPEAKER

Fitted with the New Ormond No. 1 Unit for use with Q.P.P. output, together with the Ormond "wonder" cone, it achieves an almost perfect faithfulness of reproduction, having extreme sensitivity, even response and the ability to handle great volume without distress. Three terminals and an adjustment are fitted at the back of the cabinet. Size: 12" × 12" × 6", obtainable in either Oak, Cat. No. R/452. Mahogany, Cat. No. R/453.

29/6

The ORMOND No3 LOUDSPEAKER UNIT

Extremely sensitive, it responds evenly over a wide range of frequencies, and will give faithful reproduction and long service. The working parts are enclosed in a beautifully finished bakelite cover of walnut colour. Easily mounted in a cabinet or chassis, only two screws being required.
Cat. No. R/463 C.T.

8/6

ORMOND ENGINEERING COMPANY LTD. Brit. Regd. Trade Mark

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Telephone: Clerkenwell 5334-5-6 & 9344-5-6. Telegrams: "Ormondengi, Isling."